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June 26, 1995, Vol. 29, No. 26, 130 Pages, $6/Copy, $48/Year

COMPUTERWORLD

IS director Jim Matsey: *Reynolds Metals 'had two weeks of very poor operations' because of system crashes and is still waiting for some bug fixes*

AS/400 bugs vex users

Lack of warning, poor phone support trouble OS/400 upgrade

By Craig Stedman

The AS/400's well-polished image as a user-friendly system is getting a little tarnished among large customers. Several told *Computerworld* last week that they have been blindsided by bugs and technical support problems in a major operating system upgrade IBM released in February.

The snafus have angered some large AS/400 shops that were hit with multiple system crashes in the past few weeks because of bugs in OS/400 Version 3 Release 1. Other high-end AS/400 users said they postponed installing the software after hearing about the code flaws, which have prompted IBM to generate more than 500 separate bug fixes.

Users also criticized IBM for not warning early adopters about the bugs and for failing to provide an adequate number of telephone support personnel to field questions and problem reports on the Version 3 release — a massive rewrite designed to make the AS/400 a more modern, client/server-oriented system.

"We've had problems [with OS/400] before, but not nearly as severe as the ones we've had with this. The system just bombed out," said James Matsey, corporate director of information systems at

AS/400, *page 16*

Telco threat mobilizes cable firms

Wireless emerging as key to better service

By Mindy Blodgett

Spurred by the rising threat of competition from local and long-distance phone companies, cable TV providers are turning to wireless technology.

Several of the nation's largest cable providers are in the midst of groundbreaking wireless data communications rollouts — a positive move for their businesses and the overall wireless market.

Focus on customers

Industry observers last week said the cable market's interest in wireless has exploded in recent months as a significant number of companies turn to wireless handheld devices to do the following:

- Improve customer service.
- Reduce time spent on repair calls.
- Free up technicians from mundane paperwork.
- Allow technicians to perform billing, dispatching and even sales functions.

Arrowsmith Technologies, Inc., a systems integrator in Austin, Texas, has created wireless communications systems for seven of the nation's 10 largest cable companies. Ubiquinet, Inc. in San Ra-

Cable TV, *page 121*

Procurement reform

Bill seeks to speed up govt. IS buys

By Gary H. Anthes
WASHINGTON

Joining a chorus of criticism about the way the government buys computer technology, Sen. William S. Cohen (R-Maine) last week introduced legislation he said would save $175 billion over the next five years by applying private-sector principles to government spending.

The bill would shrink the average time it takes to buy information technology products from 49 months to 18 months, Cohen said. It would repeal the Brooks Act — the 30-year-old legal framework for federal computer purchases — eliminate the General Services Administration's contract protest board and transfer oversight authority for computer purchases from the GSA to the White House Office of Management and Budget.

"The [buying] process takes too long," Cohen said. "In most cases, technology is obsolete by the time the new system is delivered."

Government IS, *page 121*

Apple CEO recommits to corporate customers

By Lisa Picarille
NEW YORK

Apple Computer, Inc. has long been under fire from users and analysts, who question whether its commitment to big business has been mostly lip service. Last week, Apple Chairman and Chief Executive Officer Michael Spindler moved to address the criticism.

Speaking at the Apple Enterprise Awards at PC Expo in New York, Spindler insisted the company is renewing its commitment to corporate customers. He said Apple will adopt a "fit in but stand out" strategy to make the Macintosh an even better client throughout the enterprise.

Michael Spindler *has his eye on the $18 billion publishing market for Apple's next push. 'I like those kind of niches,' he says.*

Recognizing that the Cupertino, Calif., computer maker's focus was too broad under predecessor John Sculley, Spindler also said Apple will no longer try to be all things to all people.

"They have to be a hell of a lot more consistent," said Mike Bailey, a systems analyst at Lockheed Martin Missile and Space, an aerospace company in Sunnyvale, Calif., with more than 9,100 Macintoshes. "One day they are interested in the enterprise and distributed networking and database, then the next they are mum on these issues. Their story changes from

Apple, *page 14*

The biggest fish

Contract value: $50 million over five years

Estimated savings to Owens-Corning: $30 million

Number of Owens-Corning employees transferred to HP: 50

Number of IS layoffs: 0

Owens-Corning hands over legacy gear to HP

By Julia King

Owens-Corning Fiberglas Corp., a multibillion-dollar materials manufacturer, last week relinquished the care and feeding of its legacy information systems to Hewlett-Packard Co. under a five-year contract valued at $50 million.

The deal is HP's largest outsourcing agreement since the computer maker entered that business 18 months ago. Among other things, it calls for the vendor to maintain more non-HP systems and take on more IS staffers — about 50 in all — than any previous contract.

"This is definitely a watershed deal for HP's outsourcing practice," said Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass.

"It's also a much bigger size deal than they're used to,

Owens-Corning, *page 12*

Get A GRIP!!

The early action on the World-Wide Web is passing over bank IS groups, as anxious financiers and hungry merchants sort out the bottom-line impact of Internet banking. Will you face the same issues as First Union Corp.'s Austin Adams?

See Management, page 79.

Newspaper

A PUBLICATION OF IDG

What's Inside

June 26, 1995

OVER 40, AND YOU'RE OUT

Out of a job, an IS veteran wonders whether all that overtime and missed family events for the company's sake were worth it. A personal account of one man's tough time. See In Depth, page 89.

■ Thanks to limited supplies and continued strong demand, **prices for traditional water-cooled mainframes stayed relatively stable** in the first half of the year. **NEWS**, *page 4*

■ **DHL Worldwide Express** hopes to gain an edge in the competitive delivery market by giving customers software that links shipping to other business applications. **NEWS**, *page 4*

■ **Data General** announces it is moving off the Motorola 88000 chip and jumping on the Intel bandwagon. **NEWS**, *page 6*

■ Figuring that sooner is better than later, **Novell plans to rename Super NOS** and says it will deliver products sooner than its originally planned ship dates in 1997. **NEWS**, *page 6*

■ **Alphatronix** surprises the industry with an integrated **client/server storage management product suite**. **NEWS**, *page 10*

■ **Progress Software** this week will outline a strategy for its high-end 4GL tools that embraces Microsoft's OLE architecture. **NEWS**, *page 4*

■ Far from being the market-busting, low-cost alternative to Intel platforms that they were expected to be, **IBM's new feature-packed Power Series desktop and notebook PCs** seem destined for relative obscurity in high-end niche markets. **NEWS**, *page 14*

■ The Department of Justice is intensifying its investigation of the **Computer Associates and Legent merger**. **COMPUTER INDUSTRY**, *page 32*

■ **Norton Utilities** is packed with nice features and takes advantage of Windows 95's 32-bit processing. If you're up to a challenge, it's worth the pain of installing a beta application on a beta version of an operating system, according to reviewer **Timothy L. Trimble**. **DESKTOP COMPUTING**, *page 39*

PRODUCT test RATING

■ **UJB Financial's sales automation** push is geared toward helping the bank compete more effectively against nonbank rivals such as AT&T and GE Capital. **DESKTOP COMPUTING**, *page 40*

■ **Northern Telecom unveils a switch** to help network administrators automate connection changes in the wire closet to keep up with frequent employee moves, adds and changes. **WORKGROUP COMPUTING**, *page 49*

■ Wireless communications software, or **middleware, is helping the wireless data market come together**. **ENTERPRISE NETWORKING**, *page 55*

■ **Mainframe shops are moving with increasing urgency** to rid themselves of aging disk subsystems, such as the 3380 and 3390-2. As a result, shipments of mainframe disks are expected to be higher this year than originally forecast. **LARGE SYSTEMS**, *page 65*

■ **Norfolk Southern** re-engineers its core railway operations systems with object technology. **APPLICATION DEVELOPMENT**, *page 71*

■ Efforts to regulate smut on the Internet — a worthy endeavor — will give some control-hungry feds authority over what heretofore has been a truly free marketplace, **Bill Laberis** says. **EDITORIAL**, *page 36*

■ **Robert P. Bell** says you have nothing to fear in the move from software copyrights to software patents. **VIEWPOINT**, *page 37*

■ The sleepy world of big iron is awakened by a surprising breakthrough in tape technology, **Max D. Hopper** says. **VIEWPOINT**, *page 37*

■ **Chemical Bank's IS staff** describes how well network training has moved from the classroom to the workplace. **CAREERS**, *page 96*

■ **Where are IS dollars going?** At least 25% of IS budgets is spent to implement and maintain client/server technologies. **MARKETPLACE**, *page 110*

■ **Charles Babcock** says IBM's investment of some of its past mainframe profits now gives it a second chance in the PC software market. **COMMENTARY**, *page 122*

Calendar ..... *Page 85*
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Editorial/Letters to the editor ..... *Page 36*
June 23 Stock Ticker ..... *Page 119*
How to contact Computerworld ..... *Page 122*

Executive Briefing

Microsoft continues its Windows 95 rollout. Most recent steps include a final preview program and migration tools. *Page 15*. **Norton Utilities** for Windows 95 is worth the pain of installation, and the individual applications that comprise Office 95 get some nice new features. *Page 39*

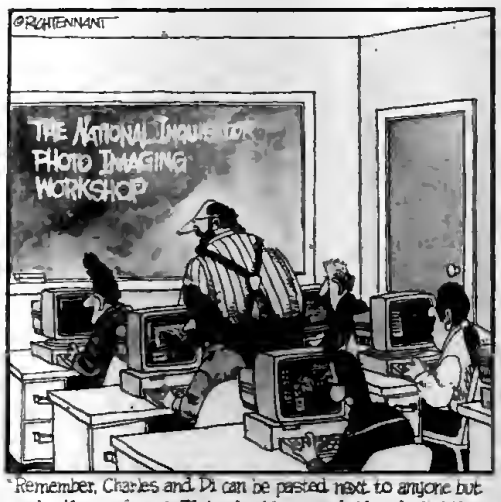
Interoperability between Windows NT Server and Windows 95 seems to be working fine, early users report. *Page 6*. The newly released **Microsoft Windows NT Server 3.51** has a directory service manager to help **Novell NetWare administrators** centrally manage account information. *Page 49*

On the 'net this week: With the help of several equity backers, including Visa International, **RSA Data Security** launches a plan to issue digital identifications for electronic commerce, and the White House begins to address demands for a **national IS security policy**. *Page 12*. **Chase Manhattan** delivers full-service banking by phone, automated teller machine, PC, Internet and fax, and IS managers are for the most part left out of the loop as banks chase down the Internet. *Pages 20 and 79*. **AT&T** announces an alliance with **BBN** to provide dedicated Internet access and a range of security, management and content creation services. *Page 32*. Companies discover how to eliminate time and distance constraints from IS recruiting by **interviewing in cyberspace**. *Page 55*. New **browsers** and security products. *Page 56*

Owens-Corning's award to Hewlett-Packard of its largest outsourcing contract shows how outsourcing has changed since it came into vogue in the mid-80s. Meanwhile, outsourcing in Europe is going great guns. *Pages 1, 28 and 68*

Novell and FileNet are developing enterprisewide workflow products. *Page 16*. **Wang's Physician's Workstation** is an example of how the company is focusing on some vertical markets with its imaging wares. *Page 24*. An industry association is developing a **test to certify imaging professionals**. *Page 49*

The 5th Wave *by* Rich Tennant



"Remember, Charles and Di can be pasted next to anyone but each other, and your Elvis should appear bald and slightly hunched – nice Big Foot, Brad – keep your two-headed animals in the shadows and your alien spacecrafts crisp and defined."

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No bargains here

Mainframe price descent slows on ES/9000s

By Craig Stedman

A funny thing happened on the way to lower mainframe prices: The cost of traditional water-cooled machines started defying gravity.

Due to a combination of limited supplies and continued strong demand, prices for IBM's ES/9000 hardware and plug-compatible systems have remained stubbornly firm this year, users and analysts said last week. Typical negotiated hardware costs are still in the range of $22,000 per MIPS, down less than 10% from late 1994 prices, analysts said.

That is a much smaller decline than mainframe buyers were accustomed to seeing in recent years (see chart). Pricing has stabilized even though the ES/9000s are on the verge of being replaced by new air-cooled mainframes based on CMOS microprocessors, as manufacturing cutbacks made during 1992 and 1993 work in favor of IBM and rivals Hitachi Data Systems Corp. and Amdahl Corp.

"I think a lot of it is just supply and demand. If you're going to line up for four months to get a [water-cooled system], you're probably going to be willing to pay more than if they had a glut of them," said Dale Perry, director of technology architectures at Bell Sygma, Inc. in Toronto.

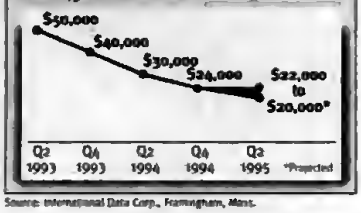
The lingering popularity of water-cooled big iron is "a statement of people's nervousness about the CMOS technology," Perry added. "We're very unsure about what that is going to do for us."

CMOS-based machines cost as little as $15,000 per MIPS and are expected to account for a majority of System/390 shipments by next year, analysts said. But for now, the air-cooled processors have only about one-third the power of an ES/9000 engine. Mainframe shops continue to buy ES/9000s, and IBM claims to be sold out into the first quarter of next year.

"People looked at the future and saw that it wasn't ready yet. So they bought something to tide them over, and they're still doing that," said Susan Gannon Middleton, an analyst at International Data Corp. in Framingham, Mass.

Down we go

Average hardware price per MIPS for high-end IBM ES/9000 mainframes



Source: International Data Corp., Framingham, Mass.

Resistance to price cuts

The order backlog limits the usual give-and-take of negotiating. "There's just no point in IBM cutting the price further," said Thomas Loane, vice president of computers and communications services at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. "I wouldn't cut prices if I was sold out on rental cars to year's end."

Charlie Borns, an analyst at Gartner Group, Inc. in Stamford, Conn., said IBM's unveiling this month of second-generation CMOS processors "may cause the price logjam to break" later this year. The systems should push more water-cooled boxes out of data centers and into the used market, which could cut prices for new ES/9000s, he said.

The shipment later this year of Hitachi's Skyline water-cooled systems, which have twice the processor power of conventional ES/9000s, will also "put a lot of heat on IBM," Middleton said.

Mainframe shops are upgrading their disk drives. See page 65.

DHL to roll out info delivery software tailored to customers

By Elizabeth Heichler

DHL Worldwide Express is gearing up for an August launch of a free software package aimed at leapfrogging similar packages offered by competitors FedEx Corp. and United Parcel Service, Inc.

"Our customers are now telling us that information is as important as the physical delivery of goods," said Alan Boehme, director of customer access marketing at DHL's Redwood City, Calif., headquarters.

Indeed, value-added information services such as DHL's offering are increasingly important to customers, said Gregg Smith, vice president of Colography Group, Inc., a transportation industry consulting firm in Mariotta, Ga. This type of project is critical for a company hoping to stay in the top tier of delivery firms, he added.

The as-yet-unnamed DHL package may be one of the first high-profile corporate applications to use Borland International, Inc.'s new Delphi development tool. Delphi is a rapid application development environment such as Powersoft Corp.'s PowerBuilder. But unlike PowerBuilder, Delphi includes a compiled language and generates stand-alone applications that can be shipped without any accompanying runtime environment.

With its Windows-based application that links customers' shipping processes to their internal business information systems, DHL will provide its customers with software that integrates their business processes with shipping. The software will support a range of shipping functions, including preparing shipments, tracking packages, ordering supplies and arranging pickups. But it can also be integrated with customers' systems such as order entry or inventory control, Boehme said.

It will be deployed in a limited initial rollout in August and distributed to DHL customers in the U.S. early next year. DHL divisions in Europe and the Asia/Pacific region have also expressed interest in distributing the software to their customers.

DHL data

DHL Worldwide Express is privately held and consists of two operating units: DHL Airways, Inc. in the U.S. and DHL International overseas

Locations: In more than 200 countries

Fleet: More than 150 aircraft

1994 revenue: $4 billion*

*Approximate

Easy street

To make the software more easily customizable, DHL is taking a modular approach to its design, said Peter Blair, development manager for customer access systems.

"What we're trying to build is not so much a specific end-user solution but a shipping engine that can be tailored to meet the needs of the customer," Blair said. Adding functionality will be a matter of writing Windows Dynamic Link Libraries, a task that can be performed either by DHL staff using Delphi or by customers using tools of their choice, such as C++ language environments.

"Delphi has a lot of great things going for it," Blair said. It not only provides a fast and productive development environment, but it also allows DHL to ship a compact stand-alone executable file that requires no special runtime environment.

DHL has a DOS-based customer application called EasyShip written in Pascal. Because Delphi is based on an object-oriented version of Pascal, it will be possible for the two applications to share information in real time over LANs, Blair said.

Progress language to embrace objects, OLE

By Elizabeth Heichler

Progress Software Corp. is working toward an object-oriented future with a Microsoft Corp. twist.

At its annual user conference in Orlando, Fla., this week, the Bedford, Mass., application development tools and relational database vendor will outline plans to bring its fourth-generation language into a future dominated by component assembly techniques and Microsoft's OLE technology.

Component assembly is a new way of building software under which applications are constructed from pre-existing object-oriented software building blocks. OLE and its related Component Object Model provide an interface that allows components to be linked together.

The first phase revolves around Progress Version 8, which is set for a fall release. It features the new SmartObject technology and will allow developers to include Microsoft's Visual Basic controls, or VBX, in Progress applications. There is a flourishing third-party market for VBXs, which are software components that provide ready-made Windows graphical user interface (GUI) functions.

"We're very positive about Progress' direction [because] as software developers, we want to be in step with Microsoft's capabilities like OLE," said Rob McConnell, vice president of Business Technology Group, Inc., a software consultancy in Atlanta.

Technology road map for Progress application development tools

McConnell's company has been beta-testing the new release and using SmartObjects, which are customizable components that provide a collection of basic functions for user interface, application logic and data access. The firm has made many general-purpose objects that can be reused in different projects.

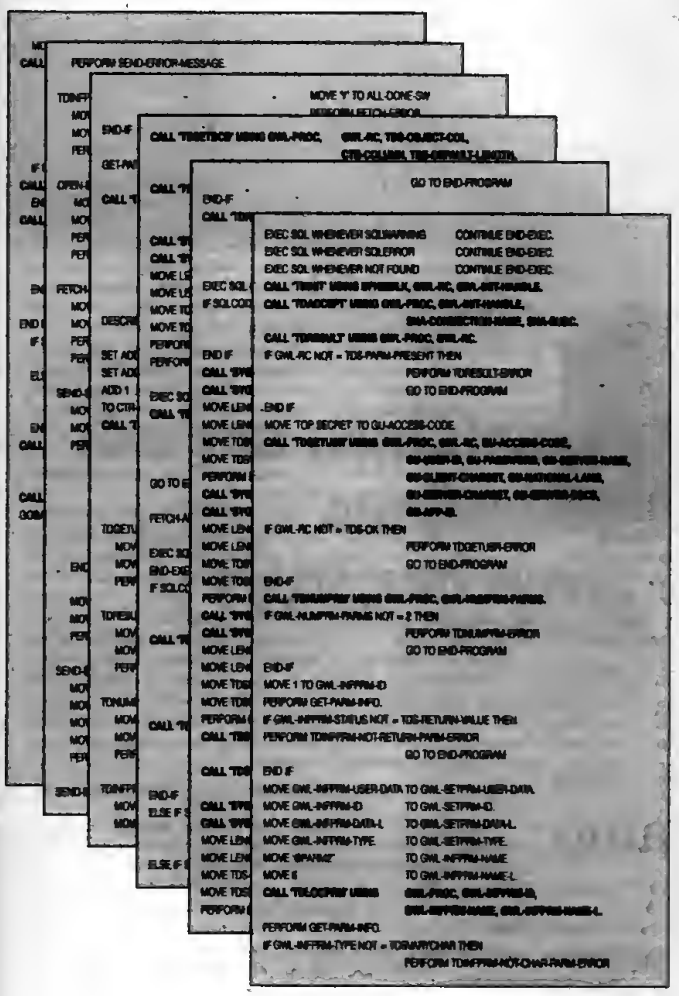
SmartObjects also helped erase much of the "behind the scenes" programming, such as database access tasks, for beta tester Chuck Krisak, supervisor of technical research at Symix Computer Systems, Inc. in Columbus, Ohio.

Development tools take a bow at recent trade show. See page 72.

COMPARE MAINFRAME DATA ACCESS

Sybase

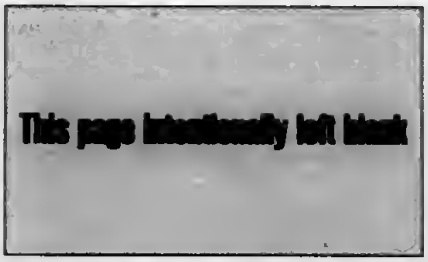
71 lines proprietary code



** Taken directly from Sybase Open/Server Mainframe COBOL Programmer's Reference, pgs C-3 through C-14 © 1994.

Oracle

0 lines proprietary code



To access mainframe data with Sybase's "Open Server" you must rewrite your existing mainframe transactions and embed dozens of Sybase proprietary interface calls. With Oracle, your existing mainframe transactions run without modification.

The Sybase code on the left queries rows from one DB2 table and returns those rows to the client This simple query example, taken directly from Sybase's "Open Server/Mainframe COBOL Programmer's Reference" manual, requires you to embed 71 lines of proprietary Sybase gateway code into a 222 line mainframe COBOL program. In contrast, Oracle's "Procedural Gateway for APPC" uses standard IBM APPC interfaces, so you can access mainframe data using your existing mainframe transactions without modification. If you want easy-to-use, standards-based, fast mainframe data access technology call Oracle at **1-800-633-1071 Ext.8118.**

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Novell pushes up Super NOS ship

By Laura DiDio
NEW YORK

Figuring that sooner is better than later, Novell, Inc. has decided to push up the timetable for its Super NOS technology initiative and deliver products earlier than the originally planned 1997 ship dates, company executives said last week.

Super NOS, announced about 18 months ago, is Novell's framework for melding its NetWare and UnixWare network operating systems into a single, more powerful enterprise platform.

The decision to hasten the delivery of the combined NetWare/UnixWare network operating system is an acknowledgement by Novell that product life cycles are getting shorter all the time and the industry is growing impatient with vendors that announce products "years before they're ready to be delivered," Sheldon Laube, Novell's newly appointed chief technology officer, said last week.

Another possible motive is the fact that Super NOS is designed to compete with Microsoft Corp.'s Windows NT Server and IBM's OS/2, both of which are already out.

The forthcoming merged network operating system will ideally combine the best of NetWare with the inherently robust application services and security of UnixWare. The combination will give users the option of running their NetWare networking services concurrently with the appropriate UnixWare application environment for their client/server networks.

On his first day on the job, Laube said the Provo, Utah, firm will revamp Super NOS, starting with its name. "Super NOS will be renamed, although we haven't yet decided what the new name will be. And we will deliver products much sooner than 1997; Novell will delineate its product road map, overall strategy and some specific delivery dates within 60 to 75 days," he said. "We already have a good handle on how to solve the technical part of merging NetWare and UnixWare. The toughest part will be coming up with the right features and functions."

Microsoft's new Windows NT Server helps NetWare administrators. See page 49.

Smooth sailing for Win 95?

Beta users report troublefree integration with Windows NT Server

By Laura DiDio

It may not make *Ripley's Believe It or Not*, but early beta users integrating Microsoft Corp.'s forthcoming Windows 95 with existing Windows NT Server networks had nary a word of complaint about the interoperability between the two environments.

The reason for this uncommon euphoria is simple: For the past six months, Microsoft engineers have built in to the two products a closely coupled, common feature set designed to give users an oft-sought, but seldom realized, "seamless, transparent migration" experience.

Typically, users run into minor and sometimes major interoperability glitches between new versions of operating system and network operating system software. This was certainly the case when Microsoft released Windows 3.0, recalled Dan Schuffert, senior systems programmer at Stone Container Corp., a paper manufacturer in Chicago. He said he "spent days trying to overcome the bugs."

But that is not the case with Windows 95 as far as Windows NT is concerned, beta testers said.

The integration of Windows 95 into Windows NT Server has been "flawless" for J. Matthew Merrick, vice president of information systems at The Merrick Printing Co. in Louisville, Ky. He has had Microsoft software suites connected on test and live networks for the past two to three months. Merrick said he has not experienced any glitches in the Windows 95 workstation's ability to access Windows NT Server file and print services.

J. Matthew Merrick, *vice president of IS at Merrick Printing, was pleasantly surprised with the smooth integration*

"The connectivity between the two environments is so good that it's a nonissue as far as I'm concerned," Merrick said. "I did wonder how Microsoft was going to handle things like print services and domain access issues to provide single-user log-ins across the enterprise, but I haven't encountered any problems," he added.

Surprise, surprise

Schuffert, a longtime Microsoft user, said he was similarly skeptical but, like Merrick, he was pleasantly surprised when bugs failed to materialize.

Schuffert said he was expecting at least "a few problems" between the two environments, especially with regard to linking Windows NT Server to Novell, Inc. NetWare file servers using TCP/IP, Microsoft's NetBEUI and Novell's IPX protocols. And he was also girding for a worst-case scenario when he installed the Dynamic Host Configuration Protocol (DHCP).

DHCP works a lot like a rental car agency: It enables businesses to maximize their fleet of available TCP/IP addresses on a lease/lend basis for the duration of their TCP/IP session, instead of assigning permanent addresses to individual users.

"DHCP is a fairly new protocol, and there are a couple of different implementations available. Since Win 95 is a new operating system, I didn't expect Microsoft would make this feature available in the beta version *and* get it 100% right on the first try. But they did," Schuffert said.

And Marek Tiekarski, vice president of IS at Edison Parking Corp. in Newark, N.J., said the smooth integration between the Windows 95 and Windows NT Server environments will ease many of his management woes.

Tiekarski said he is looking forward to deploying the common Win 32 application programming interfaces (API) to standardize his company on 32-bit applications. He said he wants to abandon the Windows for Workgroups environment, which runs only 16-bit applications.

"Having a common API means that all of our systems from low-end laptops to high-end network servers can all run the same applications. And the fact that the printer drivers are automatically loaded onto Win 95 workstations from the Windows NT Server is a tremendous benefit since I will no longer have the headache of installing and configuring printers on every user's workstation," Tiekarksi said. "Who knows, I may even end up with some free time."

Common ground

The fact that Windows NT Server and Windows 95 share many of the same baseline functions has resulted in total integration between the two environments. Things they have in common include the following:

- The same Win 32 API
- Support for long file names
- Support for the same protocols, including TCP/IP, NetBEUI and IPX
- Native support for the DHCP, which lets network administrators automatically allocate many more TCP/IP addresses
- Consistent security. Users logging in to Windows 95 are automatically authenticated against the Windows NT Server directory

DG finally joins the Intel camp

By Neal Weinberg

With its very survival at stake, Data General Corp. today will jump ship from the dead-end Motorola, Inc. 88000 to microprocessors from industry frontrunner Intel Corp.

Aviion servers powered by Intel chips are expected to hit the street late this year, as DG desperately fights to end a money-losing skid that dates to the introduction of 88000-based Unix products in 1989.

"It's a gutsy move for them," said Richard Chu, an analyst at Cowen & Co. in Boston. "The challenge they face, as with any transition, is to make sure you can get there without getting killed in the process."

Bob Ostrow, vice president at Bloomberg Financial Markets in New York and a major DG customer, applauded the long-awaited move but expressed concern about the migration from the "big-endian" byte-ordering system of the Motorola chip to the "little-endian" Intel design. He said the move will cause "a small performance hit" that should be more than offset by the speed of Intel's P6.

Ostrow said if DG had not dumped the Motorola chip, he was prepared to dump DG as his vendor because chip upgrades from Motorola, which is now focusing on the PowerPC chip, were not forthcoming. The move to Intel does not guarantee that Bloomberg will stick with DG, but "it doesn't knock them out of the box," he said.

"Our users will be ecstatic over this," said Steve Pounds, controller at Security Forces, Inc. in Charlotte, N.C., and president of the North American Data General User Group (NADGUG). He said the move to Intel will address a major user concern — the lack of applications written for the Motorola chip.

NADGUG President Steve Pounds: *'Our users will be ecstatic'*

DG is smaller than it was 10 years ago when sales of its proprietary Eclipse line of minicomputers began to slide. In 1985, DG had $1.23 billion in revenue; in 1994, it had $1.1 billion. Jonathan Eunice, an analyst at Illuminata in Hollis, N.H., said DG was on the right track when it adopted a strategy of building high-end commercial Unix systems out of inexpensive commodity components. But DG bet on the wrong horse with the 88000 chip, and that hampered the company's sales efforts during the past several years, he said.

DG now believes that not only chips, but entire symmetrical multiprocessing motherboards are becoming commodities, Eunice said. DG's mission is to be the best integrator of those components, adding value with its DG/UX operating system.

When it came to the latest chip choice, which essentially boiled down to Intel and PowerPC, DG decided to "ride the big commodity wave" with Intel, Eunice said.

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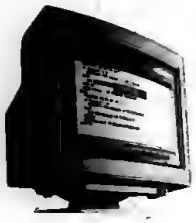

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SGI to take 64-bit across line

By Jean S. Bozman
MOUNTAINVIEW, CALIF.

Silicon Graphics, Inc. (SGI) plans to be the second major Unix player to offer full 64-bit Unix servers and 64-bit operating systems — beating out rivals Hewlett-Packard Co., Sun Microsystems, Inc. and IBM in the process. Only Digital Equipment Corp. has served up full 64-bit systems to date, industry analysts noted last week.

The advantage of 64-bit operating systems is that they allow users to directly address terabytes of data, rather than running head-on into the current 4G-byte limit of all 32-bit operating systems. Database searches are much faster because there is less data retrieval from disk drives. SGI plans to sell visualization software to display those views from large databases.

Ameritech Corp. in Chicago is already using two 32-bit SGI Challenge servers to show network management patterns for its telephone switches on large wall displays, said Jay Tanner, a senior technical architect at SBC Systemhouse, Inc. who helped design and install the 6-month-old system. "Now that we're this deep into visualization, we absolutely require the extra horsepower of 64 bits," he said.

"We'll convert our entire [server] line to 64-bit operating systems over the next year," Ed McCracken, SGI chief executive officer and chairman, said last week. SGI systems are already built with 64-bit RISC chips, he said. "We're doing it in a way that would allow people to run their 32-bit [software] systems."

CEO Ed McCracken: *SGI will convert its servers to 64-bit operating systems*

That will avoid migration problems, industry analysts said, because SGI users will be able to run both 32-bit and 64-bit applications under the same copy of the operating system.

SGI's move to 64-bit operating systems was announced as the firm said it will regroup all server-related development into a new 200-person Network Systems Division. One year ago, SGI debuted the 64-bit Irix 6.x operating system for its Power Challenge Unix supercomputers.

Jim Shaffer, manager for customer systems at Northwest Natural Gas Co., a Portland, Ore., firm with more than 40 SGI servers, said he expects SGI's division to attract more applications to the Challenge platform. His firm, an SGI beta site, plans to use 64-bit systems as its databases grow from 4.5G bytes to 20G bytes in two years. "We look forward to gaining the speed and access capabilities" of 64-bit systems, he said.

The new division is SGI's second try at tapping the client/server market. Last year, it focused on indirect sales through systems integrators and value-added resellers.

But analysts said they expect SGI to tread carefully as larger Unix server players, such as HP and Sun, push their systems as mainframe replacements.

Reality check

SGI plans to announce high-performance virtual reality systems for Wall Street traders this week at the Securities Industry Association conference in New York. The systems were designed to provide securities traders with a multidimensional view of the stock market.

HP introduces new Unix workstations. See page 52.

HP cranks up Unix response time apps

By Steve Moore
SEATTLE

Last week, Hewlett-Packard Co. introduced software that measures end-to-end application response times and correlates them with events occurring in servers, networks and databases. The move should give Unix system users snappier responses to their complaints about slow applications.

The Palo Alto, Calif., firm unveiled its new MeasureWare agent software [CW, June 12] and Transaction Tracker response time measurement technology, along with related applications that also work with a new version of HP's PerfView performance management software.

Users and analysts at the OpenView Forum user conference held here last week said HP's accomplishment is impressive. "End users would really like to be told 'Response time is bad now because there is a problem with the database,'" said Jill Huntington-Lee, a principal consultant at Brandywine Network Associates in Cinnaminson, N.J.

While HP's new tools do not automatically pinpoint problems to that degree, she said, they do provide a single-screen view of "what's going on with the database, the Unix kernel on the server, the network traffic and the application."

Users hailed the technology but pointed to usage issues. Correlating application response times with related events "is the last big hurdle to really understanding our entire environment," said a systems administrator at a large Midwestern insurance company, who requested anonymity.

Another user applauded HP's plan to eventually add automated correlation capabilities to MeasureWare but wondered whether the correlation process might become part of the problem. "Are you going to be using more CPU resources in the correlation than in the application itself?" asked Cathy Lytle, a department manager at Stanford Telecom, Inc. in Reston, Va.

News Shorts

IBM begins software revamp

IBM took the first steps last week in a promised overhaul of its software licensing and billing policies. The company announced a common worldwide license and discount structure for its PC and Unix software and said it will drop list prices in favor of suggested retail prices that more closely reflect street costs. But a planned integration of IBM's discombobulated billing systems for high-end software has been delayed.

Adobe to buy Frame

Adobe Systems, Inc. in Mountain View, Calif., said it would purchase high-end desktop publishing software maker **Frame Technology Corp.** through a stock swap worth $500 million. Dealing from its strength in desktop publishing software, Adobe is expected to use Frame's document technology to bolster its presence in the on-line publishing world, analysts said.

Power Mac bundles Notes

Apple Computer, Inc. and **Lotus Development Corp.** announced at PC Expo last week that Notes Express Release 3.31 will be bundled with every Power Macintosh sold. Additionally, customers will receive two Notes Express applications and four Macintosh-specific Notes reference databases.

New look for NetView

IBM last week introduced Version 2.0 of NetView for Windows, network management software for workgroups with up to 60 managed devices and 200 nodes. Enhancements include auto-discovery of attached devices, multivendor fault management and improved browsing of Management Information Base data on IBM or other vendors' devices, all through an improved interface. It ships July 28 at a price of $949.

Banks merge, leave IS blank

First Union Corp. in Charlotte, N.C., and **First Fidelity Bancorp** in Philadelphia agreed to merge last week, but it remains unclear how the two banks' information systems will be integrated. According to a First Fidelity Bancorp spokesperson, it could be several months before a definitive systems plan is put in place at the newest banking behemoth, which will have total assets of nearly $124 billion.

Credit-card security plan

Visa International, Inc. and **MasterCard International, Inc.** will jointly work on a common standard for securing credit-card transactions across open networks such as the Internet, the companies announced last week. The collaboration, which will result in a published specification by the fall, is intended to quash confusion in the market over each firm's separate Internet security efforts, officials said. Details on how the joint software-only standard will operate were not released last week, although the common standard will involve public key encryption technology from **RSA Data Security, Inc.**

Newt nixes porn ban

House Speaker Newt Gingrich (R-Ga.) last week surprised conservative religious groups and delighted civil liberties advocates by lambasting legislation passed by the Senate that outlaws pornography on the Internet and on-line services [CW, June 19]. Gingrich called the amendment "clearly a violation of free speech. . . And I don't think it will survive."

Digital route to home office

Digital Equipment Corp. is scheduled today to unveil a family of network products for its distributed routing strategy. The RouteAbout Access products start at $1,950 and link branch offices with Ethernet or Token Ring LANs to central sites. The Maynard, Mass., company said the router for Ethernet LANs would be available in July, and the product for Token Ring LANs would be available in August.

SHORT TAKES The **American Express Co.** has hired William Heron Jr., a former Citicorp executive, to lead the company's foray into electronic banking and other financial services.... **Sun Microsystems Computer Corp.** and **Oracle Corp.** last week said they will open data warehouse development centers in Redwood City, Calif., and Bracknell, England, this year. The centers are intended to assist users in building very large database systems.... **Chen Systems**, the Eau Claire, Wis., venture of Steve Chen, who was chief architect at **Cray Research, Inc.** for supercomputers in the 1980s, in September will release a line of symmetrical multiprocessing servers using Intel Corp. processors, Novell, Inc.'s UnixWare 2 operating system and Oracle Corp.'s client/server database tools.

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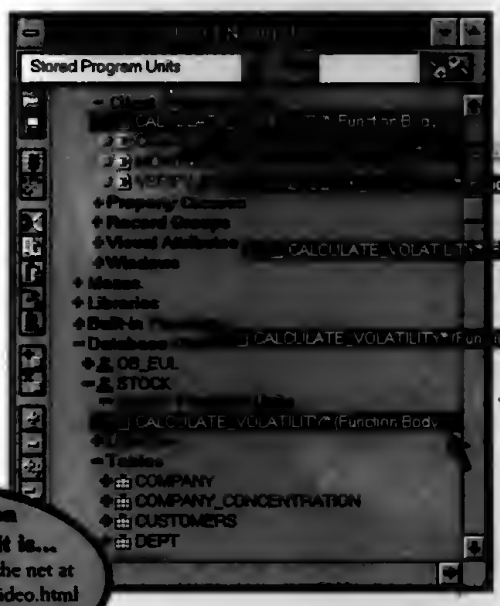

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Redefining Productivity. Second Generation Client/Server Tools

Inspire suite comes ready-to-store

By Steve Moore

Alphatronix, Inc. last week surprised the computer industry by unveiling a complete, integrated suite of client/server storage management applications bundled with related hardware.

Analysts said Alphatronix in Research Triangle Park, N.C., appears to have started from scratch rather than porting legacy applications from the mainframe world or stringing together existing client/server applications.

The company's Inspire software suite consists of a storage management framework with an integrated suite of applications for centralized storage administration, device and media control, backup, fault tolerance, hierarchical storage management and on-line access to large-scale optical libraries.

Alphatronix "came out of nowhere" with "total storage management under one umbrella," said Paul Mason, a research manager at International Data Corp. in Framingham, Mass. "They have waited to come out with the whole suite and do it properly from the beginning."

Because Inspire's storage media are recorded in a standard interchange format rather than a proprietary format, "you can mount its removable media under any Unix operating system and read it," said Michael Peterson, president of Strategic Research Corp. in Santa Barbara, Calif. "That gives you portability and the ability to recover from site-level disasters without remounting everything."

Users also praised the system's openness. "There is nothing proprietary about the [Alphatronix] system as far as Unix is concerned," said Tod Dofflemyer, a prepress supervisor at R. R. Donnelley & Sons Co. in Harrisonburg, Va., a leading book printer. He added that "some other [storage management] systems do more but have proprietary interfaces, which ends up doing less."

Donnelley, a previous user of Alphatronix optical jukeboxes, manages a 26G-byte storage server and "by this time next year will probably need twice as much space," Dofflemyer added.

Alphatronix client/server storage management

core services, including file tracking and communications, for an integrated suite of storage management applications that provide the following services:

- Central monitoring and control of all storage devices and media
- Backups in excess of 100G bytes across Unix and Novell NetWare servers
- Random access to gigabytes or terabytes of optically stored archives and databases
- Three-tier hierarchical storage management
- Fault-tolerant continual data access on distributed networks

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Alternative SNMP plan proposed

A 3-year-old gridlock among developers of a much-needed networking standard was close to being broken last week when a new proposal surfaced.

Simple Network Management Protocol (SNMP) is a method for gathering and manipulating data about vital devices such as routers. While some initial consensus on SNMP Version 2 was reached in an Internet working group last month, two of its authors put forth an alternative proposal.

The authors have requested an extension from the Internet Engineering Task Force so that their stripped-down version of SNMP Version 2 can be formally considered. — *Patrick Dryden and Steve Moore*

SIEMENS

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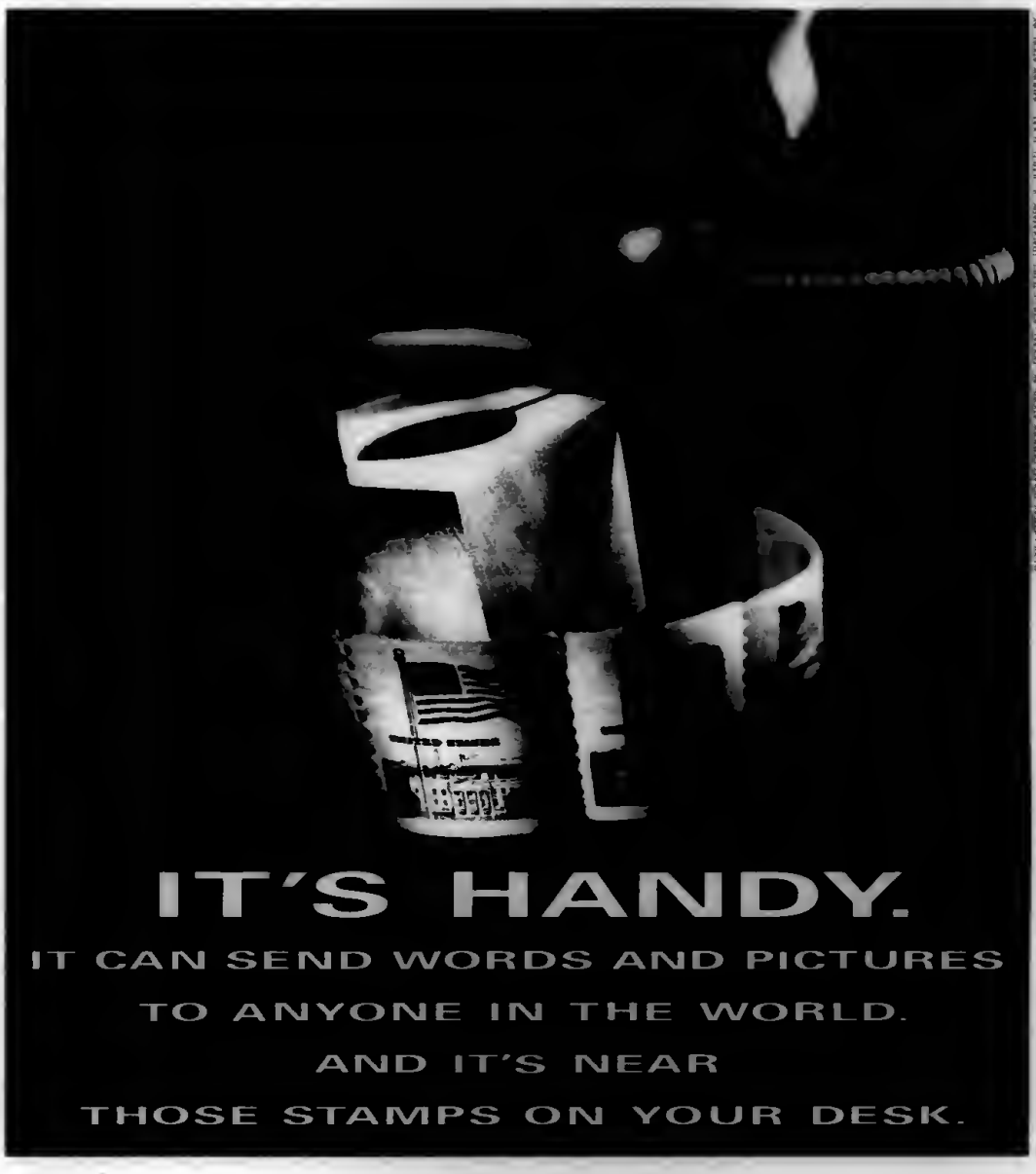

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SAFE DRIVING ON THE INFO HIGHWAY

White House drives safety plan for superhighway

By Gary H. Anthes
WASHINGTON

Acknowledging that weaknesses in the emerging National Information Infrastructure (NII) could jeopardize public safety and economic well-being, the White House recently unveiled a plan to improve both network security and the legal framework that governs the use and misuse of information technology.

The federal government has been criticized recently for doing too little to ensure the safety of the nation's information systems [CW, May 22]. But in a report, "NII Security: The Federal Role," the interagency Information Infrastructure Task Force (IITF) calls for a broad array of initiatives designed to do just that.

The NII is seen by some as the next-generation Internet, a high-capacity digital internetwork offering two-way communications in data, audio and video to multiple audiences. The Clinton administration sees it as a way to revitalize education, health care, manufacturing, government and commerce.

Among the IITF's 25 proposed actions, many of which are already under way, are the following:

- Develop and make publicly available a database of threats to information stored on corporate networks. A starting point would be the database of Internet risks maintained by the Computer Emergency Response Team at Carnegie Mellon University in Pittsburgh. However, it is still an open question as to how much information about systems vulnerabilities should be made public, an administration official said.
- Compile a list of security technologies used by the government, including those now classified; evaluate them for possible use in the private sector; and make them available to the public.
- Work with the industry to develop alternatives to the government-sponsored Clipper encryption key escrow and develop a national infrastructure for managing public encryption keys.
- Write a regulation that would allow individuals to use encryption methods now barred from export overseas.
- Extend the role of the National Communication System, which sets procedures for survival of the public switched network in emergencies, to include the NII.
- Examine whether current bank regulations are adequate for electronic banking and commerce.

What users want

The NII security report can be obtained on the Internet at http://iitf.doc.gov/. Click on "Speeches, testimony & documents."

The IITF said it is guided by users' need to:

- Control who sees their information and under what terms.
- Know whom they are communicating with.
- Know that information is unaltered.
- Know when information and communication services will be available.
- Block unwanted information and intrusions.

Punishment fits the crime

The IITF said it would also propose legislation to strengthen prosecution of computer-related crimes. Independently, Sens. Jon Kyl (R-Az.) and Patrick Leahy (D-Vt.) last week introduced "The NII Protection Act," which would make it illegal to view unauthorized information on a computer. Current law punishes only those who inflict damage.

Robert Steele, president of Open Source Solutions, Inc. in Oakton, Va., a nonprofit foundation that has berated the government for its lack of a national information security policy, called the report a "superb and clear-cut" plan of action and a "balanced representation of often conflicting points of view."

Steele provided a copy of an electronic-mail message he said he sent to White House officials in which he commended the IITF for its explicit recognition of the national security threats to the commercial communications and computing infrastructure.

Authentication authority formed to check digital IDs

By Ellis Booker

Backed by several equity investors, RSA Data Security, Inc. last week launched what is believed to be the first company devoted exclusively to issuing digital identification for electronic commerce.

VeriSign, Inc. in Redwood City, Calif., will be a certification authority — a source of digital IDs for individuals, companies and entities such as World-Wide Web servers, electronic data interchange servers, Internet addresses and so forth. Digital IDs, used for authenticating identity, are critical for electronic commerce among parties who have no pre-existing knowledge of one another.

High profile

Analysts said that, while several companies already offer digital IDs, VeriSign clearly hopes to leverage RSA's high visibility as a major source of public-key cryptography technology as well as its existing strategic alliances with the likes of Netscape Communications Corp. and others.

"There are going to be a whole number of firms who want to play in the certificate space," said Robert Weber, a principal at Northeast Consulting Resources, Inc., a management consultancy in Boston. "RSA is already going to be one of the winners in terms of providing industrial-grade encryption."

VeriSign is backed by RSA and several equity investors, including Visa International, Inc. Both Visa and RSA are members of the CommerceNet consortium, which in April announced plans for a certification authority pilot among CommerceNet's 100 or so members.

VeriSign will pick up management of CommerceNet's certification authority pilot, which has only a handful of participants, according to CommerceNet sources. The pilot will involve business transactions among several companies across the Internet using the public-key certificates for digital signatures and authentication.

VeriSign's certification services fall into two pricing schemes, one for devices such as Web servers and commercial entities and one for individuals.

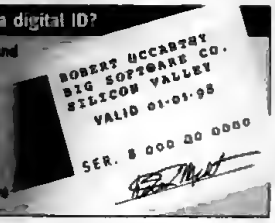
Commercial sites, which must provide an article of incorporation, a business license and an authorization letter on company letterhead, cost $290 for the first certificate and $95 for each additional one. Certificates are good for a year and cost $75 to renew.

Web Augustine, former vice president of marketing at RSA and now vice president of marketing at VeriSign, said he expects individuals will pay as little as $10 to $15 annually for certificates.

What is a digital ID?

A digital ID is attached to a message and contains the following information:

- Key holder's name, organization and address
- Owner's public key
- Digital ID validity dates
- Serial number
- Certifying authority's digital signature



Owens-Corning

CONTINUED FROM PAGE 1

which is managing mostly Unix workstations," he added.

For Toledo, Ohio-based Owens-Corning, off-loading its jungle of 200-plus computer systems will save $30 million over five years, according to Chief Information Officer Mike Radcliff. Outsourcing also enables the company's 200-person IS group to focus exclusively on implementing SAP America, Inc.'s client/server R/3 enterprise software.

During the next two years, the $3.3 billion global manufacturer plans to convert 75 sites worldwide to the integrated software SAP software will be used to support all of the company's business processes except human resources, which will be supported by a PeopleSoft, Inc. system.

Even more aggressive is Owens-Corning's goal to eradicate all paper by next May when the company moves into a new $100 million world headquarters now under construction in Toledo.

CIO Mike Radcliff: *Owens-Corning expects to save $30 million over five years*

"We are on a paper-free crusade, not only inside of the company but by creating paper-free relationships with as many customers, suppliers and business partners as we can," Radcliff said. "A big step toward this will come [from] implementing the [SAP] modules, as it will give us a fully integrated internal transaction environment."

Such integration, Radcliff continued, is imperative if Owens-Corning is to achieve the highly ambitious business goals set by its Chairman and Chief Executive Officer Glen Hinor. These include increasing overall sales to $5 billion and boosting sales outside the U.S. from 25% to 40% by the end of the decade.

"So this is not really a technology initiative," Radcliff said. "We have very focused business transformation goals."

Since January, 46 former Owens-Corning staffers in Europe and the U.S. have been transferred to HP, which will maintain a mix of desktop, midrange and mainframe computers, including 31 HP 3000s, 33 HP 9000s, six IBM RISC 6000 machines, several IBM AS/400 computers and four IBM mainframes — two in Toledo and two in Europe.

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PC EXPO

IBM's PowerPC no threat yet to Intel

By Jaikumar Vijayan
NEW YORK

After months of delay and well behind schedule, last week's launch of IBM's first line of PowerPC computers may have succeeded in answering just one pressing question: The PCs are not a mass-volume alternative to Intel Corp.-based platforms.

Far from the market-busting, low-cost alternative to Intel platforms they were once expected to be, IBM's new feature-packed Power Series desktop and notebook PCs seem destined for relative obscurity in high-end niche markets — for the moment, at least.

However, Bruce Claflin, general manager of products and brand management at IBM PC Co., last week said the high end is precisely where IBM wants its PowerPC systems to be. He said some of the letdown may be a result of wrongly perceived expectations for the platform.

"We have very carefully and belatedly narrowed the field at which the PowerPC is aimed. We have consciously targeted these systems at the power user. Over time it will expand. Today, in this class, we are the best in the world," Claflin said.

The systems are ideally suited for number-crunching financial applications and graphics-intensive environments, said William McCracken, IBM's general manager of marketing.

Some observers remained unmollified, however. "I would call it a disappointment," said David Wu, an analyst at Wall Street brokerage S. G. Warburg & Co. in New York.

The reason, according to a chorus of other analysts and observers, is that there is little compelling reason to buy the systems right now. For instance, consider the following:

- Lingering software issues, such as sufficient operating system support, remain unanswered. In fact, IBM last week announced that the only operating system that will be immediately available with its desktops and notebooks will be Microsoft Corp.'s Windows NT. AIX will follow. This means users will have limited application support.
- OS/2 for PowerPC continues to get pushed back. Last week, Lee Reiswig, IBM's general manager of personal software products, conceded that the operating system, which is expected to give IBM its best chance in the PowerPC desktop market, will not be available until at least year's end. The delay has once again sparked concern about IBM's commitment to OS/2 and could dampen the enthusiasm of application developers at a time when IBM is trying to ignite their interest.
- The systems are expensive. For example, an entry-level 100-MHz PowerPC 604-based system with 16M bytes of RAM and a 540M-byte hard drive will cost more than $3,500. That is at least $1,000 more than comparable, fully loaded 100-MHz Pentium systems.
- Users are likely to wait for systems based on the Common Hardware Reference Platform (CHRP). This is a common hardware standard that IBM, Apple Computer, Inc. and Motorola, Inc. are expected to meet by the second half of next year. Systems based on CHRP will be able to run a much wider variety of operating systems, including the Mac OS and Sun Microsystems, Inc.'s Solaris.
- IBM's long-awaited, human-centric user interface is still not fully implemented. The interface will make it easier for users to communicate with their PCs through such means as speech and touch.

Still, the raw performance of the PowerPC-based systems impressed some users.

"I personally think that [IBM's] PowerPC systems are good. They have a lot of power in them," said Stephen Korejwo, a systems administrator at the County of Delaware in Media, Pa. "But right now, there is not enough operating system support to make it viable."

"It's a whole lot faster than some Intel-based systems, but I am not entirely sure what I would be able to use them for if I was to buy it today," said one user at a hardware retailer in New Hampshire.

IBM powers up

Power Series 850

Processor: PowerPC 604
RAM: Up to 192M bytes
Hard disk: Up to 3G bytes
Multimedia: 16-bit business audio, quad speed CD-ROM drive
Special features: Speech recognition and voice command navigation

ThinkPad Power Series 850

Processor: PowerPC 603E
RAM: 16M bytes
Storage: Up to 1.2G bytes
Multimedia: 16-bit business audio, internal stereo speakers, internal CD-ROM
Special features: Optional snap-in video camera and speech recognition

Talk soup

Speech recognition, dictation and command navigation using voice commands are supported on the new IBM Power Series lines. The systems also include a feature called the Human-Centered Experience for integrating actors, agents, audio and video into a common interface. The systems are based on the PowerPC 604 and 603E chips.

◀ Attendees jammed the floor at the annual PC Expo conference, held last week in New York

Apple

CONTINUED FROM PAGE 1

year to year."

In keeping with Spindler's pledge to go after big business, Apple last week announced PowerPC 604-based Power Macintoshes aimed at high-end publishing users. Furthermore, the boxes support the industry standard Peripheral Component Interconnect bus rather than Apple's proprietary Nubus architecture — another sign of the company's willingness to play well on mixed networks.

In a separate interview, Don Strickland, head of Apple's enterprise unit, acknowledged that shipping delays have also hobbled the company's reputation. "There are customers that haven't been able to get product, and [they] have stopped purchasing from us because of this issue," he said.

"Customers have forgiven us once, twice and three times, and at some point in time there are customers that say, 'We are not going to buy anymore. We've had it.' That hurts. But we have to own up to it and fix it," Strickland said.

Another stumbling block on the road to providing a complete set of products for the enterprise has been Apple's proprietary technology. Also, Apple's lack of a complete line of software and hardware for the enterprise, along with product delays and shortages, often caused businesses with mixed computing environments to scale back Macintosh installations.

Apple has also vowed to narrow its horizontal product focus. The company plans to "drill down deep" in specific markets and offer a greater depth of hardware and software to those departments within the enterprise where the Macintosh already has a stronghold.

That means retargeting publishing entities within big businesses. Some analysts have chided Apple's revival of an old strategy, calling it a niche focus, but Spiedler disagrees. Publishing is "an $18 billion market. I like those kinds of niches," he said.

Although more than 35% of Apple's $9 billion in revenue comes from the business market, Apple has finally acknowledged it is not a force in the server market, which is a key piece of the enterprise.

"The server area is now under review," said Strickland, who claimed Apple's workgroup servers — which function as application servers — are selling well. But it remains unclear whether Apple should also be making Novell, Inc. NetWare and Unix servers.

Vaughn Hovey, manager of supply management at Eastman Kodak Co. in Rochester, N.Y., which has thousands of Macintoshes, expressed a typical view. "We are not considering Apple products as servers. The Mac is much better as a client," he said.

Apple goes a'courting

Apple's relationship with third-party channels has been tumultuous at best in the past decade, but now Apple wants to cozy up to value-added resellers, systems integrators and solutions providers. The move is an attempt to lure back large corporate customers who need specialized configurations and systems.

During the next several months, Apple will be working to sign up value-added channel partners and will for the first time allow the channel to configure Apple machines for the specific needs of large business. Apple has even authorized those channel partners to include Windows machines if they are deemed an appropriate part of a customer solution, said Don Strickland, head of Apple's enterprise business unit.

The move underscores the changing mind-set at Apple. Previously, the company required its authorized resellers to sell Apple hardware only, and three years ago, the company tried to eliminate a large portion of dealers and sell direct.

"The new organization should serve that market much better," said Pieter Hartsook, editor of the "Hartsook Letter," an industry newsletter in Alameda, Calif. "The previous organization only had a small division, and it was a profit and loss center that had to justify its existence." — *Lisa Picarille*

Win 95 Office preview landed

By Stuart J. Johnston

It's getting down to the wire.

Microsoft Corp. has begun a widespread preview program for the Windows 95 version of Microsoft Office and will soon ship an unplanned beta version of Windows 95. It is also testing migration aids for the forthcoming operating system.

The Office 95 Preview Program will distribute copies of the soon to be released Windows 95 productivity applications to 120,000 users worldwide, 60,000 of them in the U.S., said Robert Bach, director of marketing at Microsoft's desktop applications division.

The Office Preview Program is aimed at giving users the opportunity to become familiar with the new applications prior to their commercial release and to begin the migration process early.

Best defense

Some observers see a more self-serving goal on Microsoft's part. The Office Preview Program "will essentially hold onto the installed user base, which has been under some threat from [Novell, Inc.'s] PerfectOffice," said Dwight Davis, editor of the industry newsletter "Windows Watcher" in Redmond, Wash. Microsoft's Office holds about 80% of the productivity suite market. Novell has been gaining some share with its suite by blitzing Office users with a host of new functions and increased integration among the individual applications.

An easier pill to swallow

Microsoft is taking small steps to ensure user acceptance of Windows 95, including the following:

- Sending out the latest Windows 95 code to Preview Program participants
- Initiating the Office 95 Preview Program, which will send the new version of Office to 120,000 users (60,000 in the U.S.)
- Beta-testing the Windows 95 Resource Kit, which is intended to aid corporate migration to Windows 95

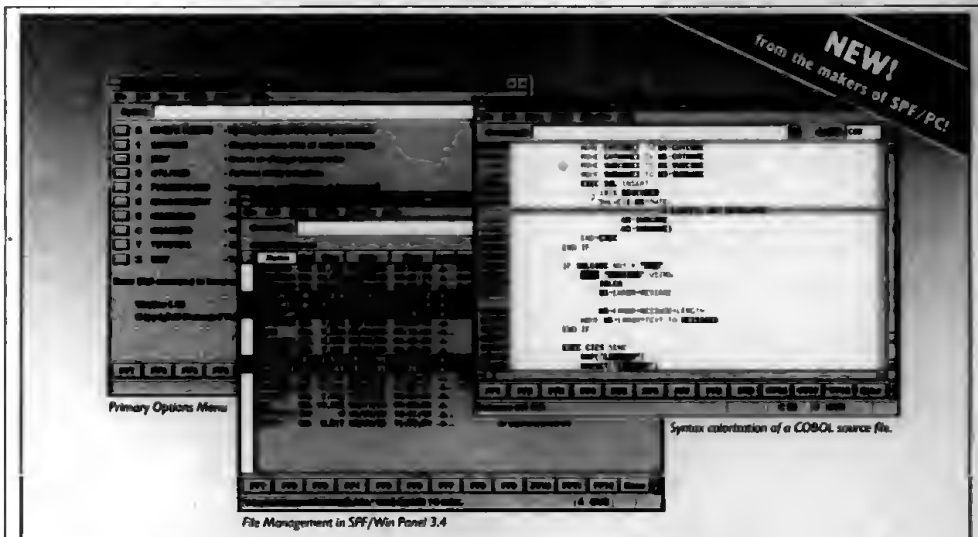
The package also includes tools to help users migrate. The Office Preview CD-ROM contains beta versions of Office 95 Standard Edition, which includes Word, Excel, PowerPoint and the Schedule+ calendaring application. The disc also contains a beta version of Project, which is not part of the Standard Edition. A separate CD-ROM with the latest version of the Windows 95 operating system is in the package as well.

Meanwhile, Yusuf Mehdi, a product manager at Microsoft's Personal Systems division, said the company will send by the end of June an updated version of Windows 95 to U.S. participants in the Windows 95 Preview program. That refresh of the Preview beta incorporates all the changes that have been made to the system, including improvements that fixed earlier problems with the system's multitasking code, according to Mehdi [CW, April 3].

Users who have beta applications from other vendors that require later versions of the Windows 95 beta code will soon be able to test those applications, Mehdi added.

Initially, the Preview program planned to send participants only a single version of the beta code — referred to as Build 347 for the number of times the system has been recompiled. Microsoft said in April it was releasing Build 347 so users could test it for compatibility with 16-bit Windows applications. However, it turned out that beta versions of some 32-bit Windows 95 applications from third-party developers required a later build than 347, so the company decided to send Preview participants the newer build, Mehdi said.

The new build, called Build 490, is designated as a first "release candidate." That means that if beta testers or developers do not identify any "showstopper" bugs in the code, the build could be released as the final product.



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Novell, FileNet ink workflow pact

Tools to link groupware to high-end workflow systems

By Tim Ouellette

The chasm between high-end production workflow systems and smaller PC-based ones may be bridged by next year thanks to an agreement between FileNet Corp. and Novell, Inc. announced last week at PC Expo in New York.

The companies are developing a line of products to provide workflow capabilities in Novell's desktop and groupware applications while connecting to FileNet's traditional large-scale production workflow systems (see chart).

"That sounds exactly what we are looking into," said Brett Wallis, lead systems analyst at Integon Corp. The Winston-Salem, N.C., insurance firm uses a FileNet system to automate claims processing but hopes to spread workflow systems to other areas of the company, Wallis said.

"The nicest part of this is it is opening so many new worlds for us," said Loretta Goralczyk, imaging manager at American President Lines Ltd., a shipping company in Oakland, Calif., and a FileNet user. "It really gives you the stability you are looking for. Now it is an open-ended system."

Workflow software automates and tracks the flow of work through an organization. Production workflow systems are supported by large databases, while routing, collaborative and lower-transaction-type workflow depend on electronic-mail systems to move work around.

Analysts said the breadth of the agreement across high- and low-end workflow, more than the individual products themselves, was significant because compatibility is a major issue in a market with no established standards.

"The danger of using best of breed in each category [of workflow] is the compatibility across workflows," said Scott McCready, an analyst at International Data Corp. in Framingham, Mass.

The individual products include Ensemble Discovery Edition, an add-in to Novell's PerfectOffice software suite that provides a button for review and approval routing of a document. A stand-alone product, called Ensemble, will integrate with Novell's groupware products (see story below), while Server Access Module will let Ensemble users communicate with FileNet Visual WorkFlo systems.

Costa Mesa, Calif.-based FileNet also plans a version of its Visual WorkFlo for NetWare.

"It's nice to tie to Novell [NetWare] because that is our standard here," Wallis said. "That would give us some advantage in going out into the field."

With the Novell connection, analysts said they expect users to gain a new perspective on when they can use a FileNet system. "They won't be wading knee-deep in paper before they call FileNet," McCready said.

The Ensemble products, expected to be delivered by the first quarter of 1996 for Windows 3.1, will be previewed at the Networld Interop show in September. Pricing will be announced then.

A workflow ensemble

Windows 3.1 versions of the following workflow products from FileNet and Novell will be available in the first quarter of 1996, with Windows 95 clients expected that summer and Macintosh versions due at the end of next year

PRODUCT	APPLICATION
Ensemble Discovery Edition	Provides review and approval via a dialog box inside PerfectOffice suite applications
Ensemble	Stand-alone graphical tool that uses GroupWise messaging as the workflow transport among Novell's groupware products
Server Access Module	Lets Ensemble clients communicate with FileNet Visual WorkFlo servers and initiate production workflows
Visual WorkFlo for NetWare	FileNet's production workflow system for NetWare networks

Group leader

Novell may clinch a victory of sorts over its groupware rivals if it delivers the workflow component of GroupWise by the end of the first quarter of 1996 as planned.

Novell's agreement with FileNet will add unstructured, E-mail-based workflow capabilities to the GroupWise collaborative computing platform.

Code-named Ensemble, it will provide a graphical design and monitoring tool for performing routine administrative tasks, such as status tracking and travel request routing.

"This is a great move for Novell," said Bruce Silver, principal of Bruce Silver Associates in Weston, Mass. "Their groupware product was at risk of being ignored with the focus on Lotus and Microsoft," he said, referring to Notes and Exchange.

Novell has "gotten a jump on Lotus and Microsoft," said Connie Moore, an analyst at BIS Strategic Decisions in Norwell, Mass. "If you look at the combination of groupware with workflow, it is a potent combination — and you don't have that with Lotus and Microsoft."

If users want to build workflow into Notes, they must bring in third-party developers to write the applications, Moore said. Microsoft has no clear statement of direction on workflow in Exchange. — *Suruchi Mohan*

AS/400 bugs

CONTINUED FROM PAGE 1

Reynolds Metals Co. in Richmond, Va. Reynolds supports its manufacturing plants on multiple AS/400s.

Bob Dies, general manager of IBM's AS/400 division, acknowledged that telephone support has been insufficient and said staffing has been increased by 50% in the past six weeks. He and other IBM officials also confirmed there are bugs in V3R1, but they said less than 100 customers have reported major difficulties.

"I'm not saying that problems don't exist, because apparently they do, but we don't have a lot of them," Dies said. V3R1 is equal to or better than previous OS/400 releases on the basis of bugs per lines of code, he added.

David Andrews, a consultant in Cheshire, Conn., said that because the bugs mainly affect pieces that many users have not implemented, such as TCP/IP networking, they appear to be wreaking havoc with only a small percentage of early V3R1 sites. "But there has been a handful of customers that IBM has irritated the hell out of," Andrews added.

Those are large shops, such as Reynolds Metals, which account for the majority of IBM's AS/400 revenue because of the size of their system installations. V3R1 ran fine when it was first loaded on a development system and then on some of Reynolds' production machines, Matsey said. But the box that handles communications with the plants and outside vendors crashed on an almost daily basis for two weeks after the software was installed on it in late May, he said.

Birthday party

IBM marked the AS/400's seventh birthday last week by introducing long-awaited RISC models at PC Expo in New York. The boxes will boost overall performance by 50%; server-specific models will get a threefold increase in throughput.

talkback@cw.com

What has been your experience with the OS/400 Version 3 Release 1 operating system? How would you rate IBM's response? Sound off to us at talkback@cw.com. We'll publish a sampling of reader opinions in an upcoming issue.

Feeling the pain

Users and analysts said the parts of V3R1 most afflicted with bugs include the implementations of TCP/IP and IBM's Advanced Program-to-Program Communications networking protocol. The operating system's PC connectivity software and a new file system that supports Unix data formats also are problematic, they added.

"This was the ugliest, most painful upgrade of my career," said the manager of midrange technical support at a large specialty chemicals manufacturer that runs its plants on AS/400s. He said the company had two system crashes on consecutive days in early June that slowed operations at two dozen plants for upward of 32 hours.

The machines are more stable now, but the company is running only the base V3R1 code and will not trigger new database, TCP/IP or PC access features "for at least another month."

IS executives at Harley-Davidson, Inc. in Milwaukee and Enterprise Rent A Car Co. to St. Louis said they put off V3R1 installations after getting wind of the bugs. "For us, this is very non-AS/400ish," said Rich Kolbe, director of MIS at Harley-Davidson. "Past releases have really been almost nonevents."

Gannett Co. in Arlington, Va., has avoided major problems with V3R1, but it was "grueling" due to support deficiencies, said Scott Plumer, manager of platforms and integration services. IBM took six hours or more to respond to problems that used to get solved in less than half that time, he said. "They didn't seem like they were prepared this time."

Call and response

Users say

- Bugs in several parts of the operating system have caused crashes at large companies, and fixes are too numerous to track.
- IBM failed to warn early users about the bugs and the potential for system downtime.
- IBM did not have enough technical support workers in place, leading to delays in response time.

IBM says

- A single tape containing all current bug fixes is shipping. A revision of V3R1 with built-in bug fixes is due by mid-July.
- Predicting problems is difficult until a pattern emerges. The impact of bugs varies depending on the installation.
- Telephone support staff for the AS/400 is in the process of being increased by 50%.

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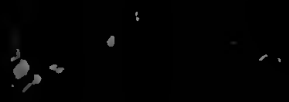

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Computer Systems

Chase closes in on 'virtual banking'

By Thomas Hoffman

The Chase Manhattan Bank NA is one step closer to delivering what banking circles commonly refer to as "virtual banking."

The New York-based bank recently rolled out a service called ChaseDirect, through which the bank's customers can do all their banking through the electronic channel of their choice — telephone, automated teller machine, PC, electronic mail via the Internet or fax.

"This is the first time we've married the whole set of services for customers," said Mitch Ratliff, vice president of marketing at Chase.

ChaseDirect is built around a middleware package from Early, Cloud & Co. called Message-Driven processor. The package links ChaseDirect customer specialists with all of the bank's disparate databases that contain customer information on checking, mortgage, credit card and other accounts.

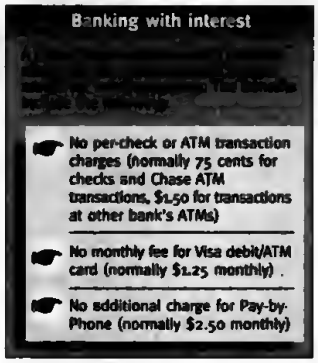
This allows the 50 ChaseDirect customer service specialists to answer customer queries on a variety of products and services.

Chase has also developed an IBM DB2 relational database software program that enables ChaseDirect customer specialists to record and track all customer account activity, transactions and customer conversations, according to Michael Levine, division executive of regional banking systems at Chase.

Chase Manhattan's Michael Levine: *ChaseDirect allows customer specialists to record and track all customer account activity*

"We can recognize the last time a customer called us, and we have a full set of customer product purchasing information at our fingertips," Ratliff said.

That should help streamline customer applications and processing for home equity loans and credit cards because Chase customer specialists will have most, if not all, of the necessary application data in front of them. "We think it provides a more personalized level of service," Ratliff said.



indeed, savvy banks are relying more heavily on technology these days as they become more proactive in their cross-selling strategies with customers, analysts said.

"Virtually all of the superregional banks are hearing through their customers that they want to have a single point of contact and not have to figure out the innards of the bank on their own," said Laura Stuart, president of Stuart Research, a Cambridge, Mass., banking consultancy.

"Bankers know intuitively that 80% of their profits come from 20% of their customers. What most banks can't do is identify the 20% of their customers since their systems cannot measure that profitability effectively," said Beth Summers, a senior bank analyst at Ryan, Beck & Co., a West Orange, N.J., broker/dealer.

Internet banking gains support. See Management, page 79.

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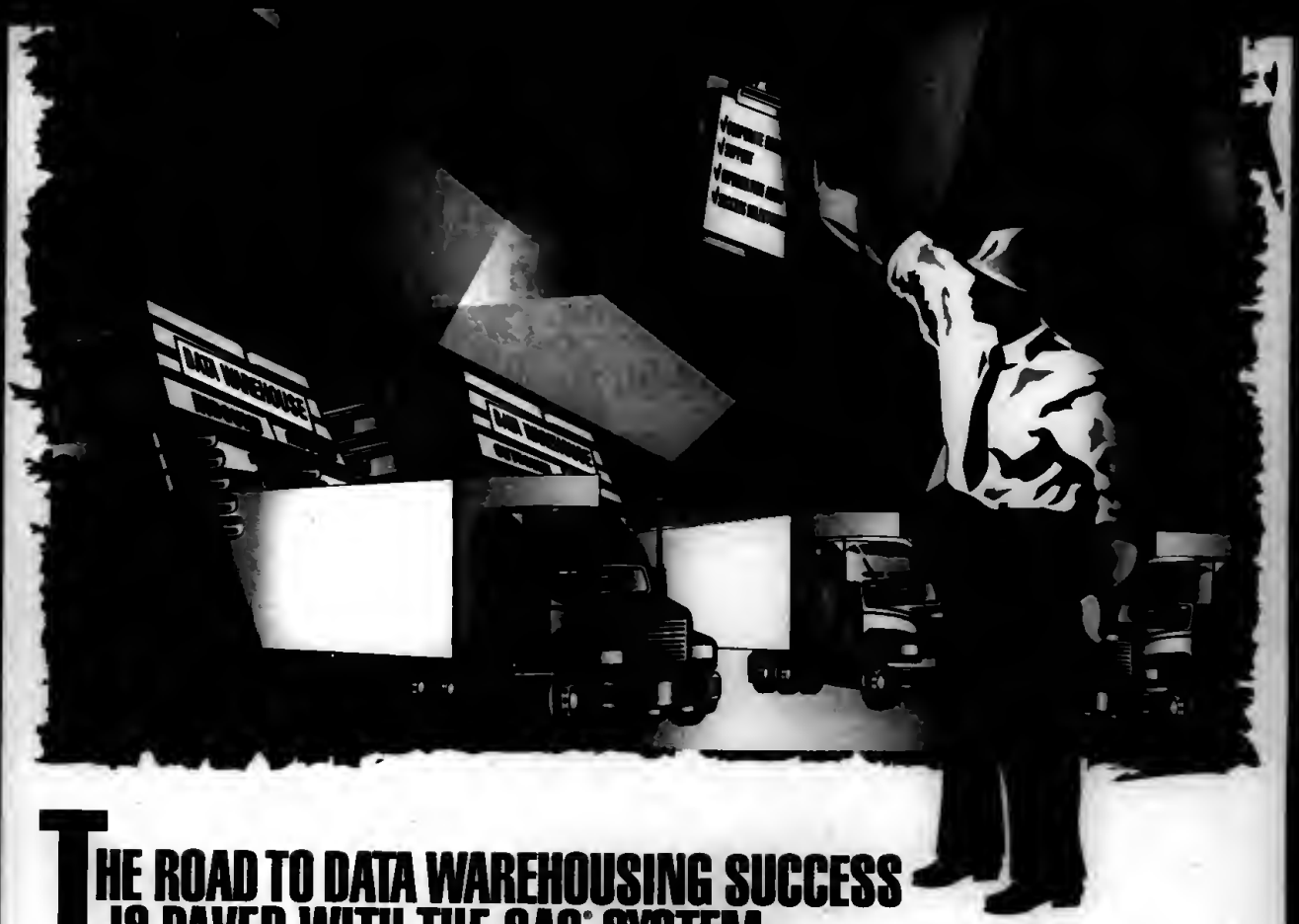

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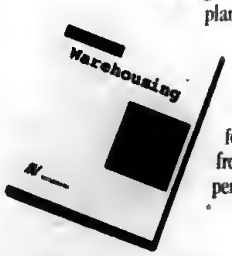

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IBM accelerates revamp of OS/400; PowerPC version due later this year

As IBM ships the last of its promised OS/400 Release 3.1 components this week, it is paving the way for delivery of a completely redesigned, PowerPC-based OS/400

their respective server platform

The stakes are high. IB claimed an installed base of 300 AS/400s at the end of 1994, sales growing by 50,000 units

IBM big iron revamps bode well for 95; Client/server OS, 64-bit architecture await AS/400

IBM has spent the past few years trying to answer questions about the ce in a client/server world. In will start to find out whether ant got it right.

ver-oriented rewrite of the g system is supposed to be

eagerly awaiting the coming makeover.

IBM reiterates PowerPC comm

IBM is expected to ship its long-awaited PowerPC systems in June, but with a beta version of OS/2 for Lee Reiswig, general manager of the Personal Systems Products division, said at an analyst conference in

HP set to launch PA-8000 ch systems not expected until 19

hard Co. plans to announce its next ecision Architecture microproces- on March 6.

expected to achieve a rating Cint92 and greater than 550 formance numbers are processor news produc- with the product said. speed greater than 200

Sun Microsystems Inc.'s Sparc Technology Business and MIPS Technology Inc. have announced the architecture of their next processors a year before they will appear products.

"It's sort of a liar's race," said Andrew editor of Inside the New Computer Indus "The stakes keep going up."

The RISC chip makers are trying to have processors advanced enough to not ing each other but to also

IBM, Motorola To Announce 64-bit PowerPC

Sun announces untested 64-bit chip

compared to Digital's Alpha AXP 21164, which has a SPECint92 rating of 330.

HP, Sun's biggest rival, is shipping a PA-7150 processor that has a SPECint rating of 135 and next month will introduce the PA-7200, which is expected to have a SPECint92 rating of about 150.

the performance gap but

...s curtain on ...chip, keeps ...on Intel project

Determined not to lose mind share in the processor game, Hewlett-Packard Co. last week provided a glimpse of its 64-bit PA-RISC 8000 architecture, which is still a year from delivery.

At the same time, officials of HP and Intel Corp. all but denied a wire service news report that said the results of the two companies' collaborative micro processor development would in 1997 as

That report was based on Barrett, who

IN TUNE with

In showing that the 64-bit UltraSPARC an betting that 64-

"By the end Larry Inman, HP don't see the

IBM, Motorola show off PowerPC 620 prototype; volume shipment expected in '95

IBM and Motorola are announcing the PowerPC 620 this week, the most advanced implementation of the PowerPC architecture to date.

As part of the announcement, the two companies introduced the first 620 prototype, with sample shipments to follow in the second quarter of 1995.

Volume production second half

64-bit PowerPC r, which IBM and will announce h, promises dra- rovements in multiprocessing over the 601, chips, sources

to comm —twice 604's c

The other apart Powe

1997 date set for delivery of HP/Intel P7

Intel Corp. acknowledged last week that the P7 will be the first chip to come out of the alliance formed with

per second (see "Pentium now, VLIW later," Jan. 30, page1).

The basic concept of the VLIW is to have the com

PowerPC: Much hype, little

PC Week via First!: Hannover, Germany -- IBM, A and Motorola Inc. showed little restraint in hyping here last week, but in private, officials from their standard isn't ready for prime time.

range of PowerPC processors in the pipe price/performance, lagging system and continues to keep the PowerPC from bre the and winning converts in the PC ma ing to take two to three years for us to really Hester, general manager of IBM's Systems division, in Austin, Texas. "I don't have illusions that overnight disc

INTEL-HEWLETT-PACKARD ALLIANCE SEEN RALLYING A 64-BIT MICROPROCESSOR STANDARDS EFFORT

There are scant details of how Hewlett-Packard Co. plans to introduce technology developed under its

IT'S NICE TO SEE IBM AND HP FIGHTING OVER WHO WILL BE NUMBER 2.

In fact, it's downright heartwarming. Digital, of course, beat both of them to 64-bit computing long ago. And while neither one has a 64-bit machine to sell you, we're now on our second generation of 64-bit Alpha-based workstations and servers. Machines that offer price/performance leadership at every level. For example, our new AlphaStation™ 250 system is half the price of the comparably performing HP workstation.[1] While our new AlphaServer™ 8200 and 8400 systems are the first and only servers capable of running the newest 64-bit database products —letting your application directly address up to 14GB of data in main memory, and giving you performance gains of up to one hundred times over 32-bit enterprise systems. Alpha-based systems run thousands of applications—including the ones you need most. And, thanks to the enormous capacity and scalability of 64-bit architecture, they'll work with your present equipment, and grow almost limitlessly as your business grows. Sure, it's possible that HP or IBM really will have 64-bit machines, eventually. But even when they start offering real-world 64-bit products, it'll still be years before they'll have been as thoroughly tested and evolved as ours are right now. So why wait? Whatever your business, whatever your budget, you can do what thousands of companies all over the world have done—and what IBM and HP have been unable to do—have a 64-bit computer you can call your own. For more information, contact your Digital business partner. Or call 1-800-DIGITAL. Or reach us via our Internet address: moreinfo@digital.com.

Digital's lucky chip

...sales of systems based on the Alpha chip have taken off, jumping 66% in the past year, and now exceed VAX sales. The chip excels at handling thousands of concurrent users—which is why regional phone companies

Digital Ships Its 100,000th Alpha System

Digital Equipment Corp. reports it shipped its 100,000th 64-bit Alpha system. The milestone is significant, in our opinion, in that competitors IBM, Sun, and Hewlett-Packard have yet to ship their first 64-bit product.

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Imaging software follows doctors' orders

Physician's Workstation may speed up diagnoses

By Tim Ouellette

Do you want to decipher hieroglyphics? Read someone's medical record. Or would you rather review your record with your doctor — including X-rays and other test results — on an image-enabled PC in the examining room?

That was the aim of Wang Laboratories, Inc. when it announced its Physician's Workstation last week.

"This recreates everything we are doing right now," said Dr. Allen Wenner, a physician on the information services committee at UCI Medical Affiliates, Inc. in Columbia, S.C., the first installation to run Physician's Workstation. "It is not simply a character-based representation of paper," Wenner said.

The imaging software lets users — in this case doctors, nurses or office workers — access via a Windows graphical user interface a patient's complete medical record, from health forms and prescriptions to test results from an ultrasound or electrocardiogram.

The Wang software runs on an IBM RS/6000 server with Intel Corp. Pentium-based client PCs located in examining rooms, nursing stations and administrative offices at UCI's 23 medical centers around the state.

"They are meeting a new market requirement for point-of-care systems while existing systems are in radiology or the lab, for example," said Tom Wilmot, an analyst at Aberdeen Group, Inc. in Boston. He said he considers Physician's Workstation to be more of an integration tool than a replacement to existing health systems.

This means the client/server product would work with the existing information systems infrastructure, which Wilmot said was a more open approach than most proprietary health systems currently on the market. Data can also be received by fax, scanned or entered manually.

Going vertical

Wang is focusing on the medical and government markets with the release of Physician's Workstation and the acquisition of Applied Data Systems (ADS), a Wang imaging value-added reseller in Chelmsford, Mass.

Vendor/Product	Application
Wang Physician's Workstation	Point-of-care imaging
ADS/ PowerTrak	Land records management
ADS/ CharTrak	Medical records management

Medical staff will be able to monitor patient trends and patterns faster than the usual paper shuffle allows. Wenner said he recently had a three-hour conference call with other doctors to determine a patient's diagnosis. With the Physician's Workstation, he could have achieved the same result in seconds because all patient information over time is maintained in one place, he said.

Wide open system

Users will also be able to run other applications on the client PC, such as medical decision support, patient education modules, business programs and electronic mail. Because doctors use several different applications each day, this is better than forcing too much functionality into one piece of software, Wenner said.

"Wang was quick to realize they will never build the ultimate workstation because every physician will use their own modules. So they built it wide open," Wenner said.

Physician's Workstation was developed by Wang's Specialty Solutions Group, a division focused on developing vertical applications for the Billerica, Mass., company's Open/image and Open/workflow software.

In any language, there are only four words Natural ND doesn't understand. "It cannot be done."

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This kind of success is not new to us at Software AG.

Natural has always enabled clients to embrace the latest technology and write improved applications as a result. In fact, you'd be hard pressed to find a platform, both established and state-of-the-art, that Natural can't work on.

But this is only one of the features of Natural. When we created it, we gave ourselves a few goals that today look positively prophetic.

First we insisted on making it simple. We felt that nothing should come between the concept and the program. So we wrote it in plain English. A welcome relief from the double-dutch of most programming languages and an end to the indigestible spaghetti code favored by some. Now, if you can describe the problem, you've almost written the program to solve it. Today it's called Rapid Application Development.

"Changes that used to take months can now be done in days."

Next, we made it scalable. It functions as solidly on the latest technology as it does on mainframes, where it accounts for 20% of the market. This is good news for any company about to embark on a re-engineering project.

Another goal was to make it robust. We haven't found a client yet who can feed enough volume data through Natural to cause a glych.

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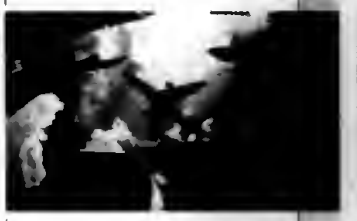

These days, the need to respond quickly to market pressures has never been so acute, but at least anticipating change is half-way to dealing with it.

Thankfully, with Natural ND, "it can be done."

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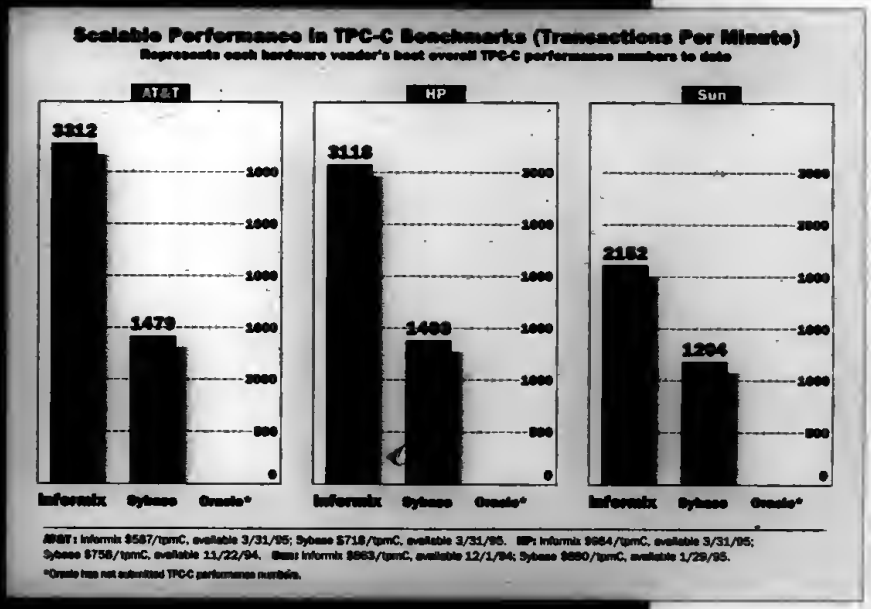

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Outsourcers asked to pull more weight

Customers want bigger savings, customized services

By Julia King and Thomas Hoffman

■ When outsourcing came into vogue in the late 1980s, it was the lure of cost savings that prompted companies to turn over their corporate data centers to outsiders.

Since then, outsourcing has evolved into much more than someone else minding the MIPS. Companies are now farming out everything from isolated software applications to entire business processes.

They also are demanding that outsourcing vendors do much more than slash costs. Savvy and highly aggressive customers want leading-edge technology and quantifiable service and productivity gains. They want variable pricing that is tied to vendor performance. They want shorter-term, more flexible contracts.

In short, they want whatever they want. And more often than not, they are getting it.

Course of action

"Today, there's a huge difference in the way contracts are written. They essentially guarantee that if a vendor doesn't provide a certain level of service, the customer can litigate," said Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass.

"Before, clients were getting taken advantage of [because] at the back end of [multiyear] deals, they were locked in to dated, obsolete technology," he added. "Now you see things like technology upgrades built in to contracts from the start."

The Chevrolet Division of General Motors Corp. in Troy, Mich., is a case in point. In 1986, Chevrolet wanted to concentrate on carmaking and outsourced its Customer Assistance Center to Electronic Data Systems Corp., a GM subsidiary.

A unique aspect of the contract is Chevrolet's method of measuring EDS' performance. Instead of being based on call-center volume or the number of customer problems resolved, it is based on the number of callers who purchase Chevrolet cars a second time.

Bell Atlantic's Laraine Rodgers *says that companies should measure outsourcing success based on their 'mission and value'*

"That's because it's the impact on Chevy revenues and profits that matters," said Bob Johnson, manager of the company's call center. Currently, 47% of customers who call the help center buy a second Chevy, he added.

Today, specific industry experience can also make or break an outsourcing deal.

Auto smarts

One of the main reasons United Technologies Automotive chose The Genix Group over Integrated Systems Solutions Corp. (ISSC) in 1993 was Genix's knowledge of the auto industry, said James J. Schindlbeck, manager of support services at the Dearborn, Mich.-based division of United Technologies Corp. Since then, the division has reduced its mainframe operational costs by more than the industry-standard 15% to 20%, he added.

Laraine Rodgers, vice president of information processing at Bell Atlantic Corp. and a former Xerox Corp. information systems executive, says companies that measure the success of outsourcing based solely on cost savings are naive. "That's not really the focus — [companies] should be focused on mission and value."

But according to analysts, most users are only just beginning to tap the full potential that outsourcing holds.

"Outsourcing is continually evolving. It has gone from cost-cutting to outsourcing non-value-added functions," said Natasha Krol, an analyst at Meta Group, Inc. in Stamford, Conn.

Krol said she further envisions companies "dipping into pools of services on an as-needed basis as they create products and services on the fly."

Early on, Eastman Kodak Co. — one of the first companies to outsource IS operations under a landmark 1989 deal with IBM and Digital Equipment Corp. — had its share of managerial headaches. Among them was a protracted dispute with certain software vendors over the transfer of software licenses to the outsourcing vendors.

Now, by comparison, analysts said such disputes are few, primarily because outsourcing has become so commonplace and accepted.

A Kodak spokesman said the Rochester, N.Y., firm's early disputes have long been resolved and that, in general, outsourcing is saving the company what executives had initially anticipated, which was about 30% in IS costs.

At Southern Pacific Corp., which entered into a 10-year, $500 million turnkey deal with ISSC last year, the savings have amounted to the $10 million annually that the company anticipated. Tom Matthews, chief administrative officer at the San Francisco-based railroad, said that, like Xerox, the company has had its share of growing pains.

"In the early going, there was a lot of debugging and learning about each other," Matthews said. But with that behind him, he added that his life "has been boring the past nine months. ISSC has a pretty good handle on the situation. We would certainly do it again."

Farming out

Under an emerging trend known as "out-tasking," companies are farming out very specific and narrowly defined functions and services, according to Allie Young, an analyst at Dataquest, Inc. One recent example is McKesson Corp., a San Francisco-based drug distributor that has hired Keane, Inc. to maintain all of its software applications, including newer client/server-based applications and legacy systems.

Top 10 outsourcing deals

Customer	Vendor	Amount
Sears	Advantis	$6 billion over 10 years
Xerox	EDS	$3.2 billion over 10 years
General Dynamics	CSC*	$3 billion over 10 years
McDonnell Douglas	IBM	$3 billion over 10 years
Delta Air Lines	AT&T	$2.8 billion over 10 years
Continental Airlines	EDS	$2.1 billion over 10 years
Hughes Aircraft	CSC*	$1.5 billion over 8 years
Inland Revenue Service	EDS	$1.48 billion over 10 years
British Aerospace	CSC*	$1.35 billion over 10 years
KF Group	EDS	$1.1 billion over 10 years

*Computer Sciences Corp.

Source: Gz Research, Inc., Mountain View, Calif.

Outsourcing in Europe is on the rise. See page 68.

The people puzzle

Last year, Xerox outsourced its legacy systems to EDS under a 10-year, $3.2 billion deal that has been surprisingly smooth thus far — despite the cultural challenges involved in moving 2,000 IS staff members in 20 countries from Xerox to EDS. Jagdish Dalal, Xerox's vice president of information management, acknowledged that the firm encountered a few problems along the way.

For example, Dalal said Xerox end users were confused by the new problem-reporting structure. They wondered if they would continue to report their telecommunications problems to the same support personnel. The reporting structure did not change after all, Dalal said. Nevertheless, end users were befuddled by the shift to EDS.

Xerox also had to deal with the thorny issue of informing its IS staffers that they had been traded to another team. At first, employee reaction was negative, said Bob Monastero, director of human resources at the global process and information management unit at Xerox in Rochester, N.Y.

In October 1993 — six months before announcing its outsourcing deal with EDS — Xerox held several "town meetings" with IS personnel across the U.S. to inform them of the plan. The forums let Xerox react to employee concerns about the impact on pay and benefits.

Monastero admitted that in hindsight, he would have handled things differently.

"One of the lessons learned is that, if possible, don't take six months to work through the contractual issues because until the contract is completed, you're not able to answer all the questions the employees have," he said.

Monastero's advice to others considering the outsourcing route is not to play musical chairs with the people whose jobs are tabled for outsourcing, which he claims to have learned before the EDS deal was completed. "If you do that, you then have to explain why you made exceptions for certain people. Plus, you suffer as the customer because you're the recipient of those services," he added. — *Thomas Hoffman*

SAP, outsourcer join forces

SAP America, Inc. and Affiliated Computer Services, Inc., a $300 million Dallas-based outsourcing firm, last week signed a one-of-a-kind marketing pact requiring joint sales of each other's software and outsourcing services.

The nonexclusive arrangement is the first of many such relationships that analysts said will blossom between software vendors and outsourcers in the next year or so.

"There's a very definite trend in this direction because outsourcers are looking to bring more to the table than just managing IS," said Michael Corbett, executive director of The Outsourcing Institute, a New York-based industry group that represents both outsourcing vendors and customers. "Deals like this allow outsourcers to bring [to customers] very specific business solutions, plus their IS expertise." — *Julia King*

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Computer Industry

CA/Legent under microscope

Justice Department steps up investigation; users air concerns

By Thomas Hoffman and Mitch Betts

The U.S. Department of Justice has intensified its antitrust investigation of Computer Associates International, Inc.'s proposed acquisition of Legent Corp.

Two weeks ago the Justice Department said it would investigate the CA/Legent merger. Last week, CA confirmed that the Justice Department made a so-called "second request" for more documents on June 16, a sign that a routine merger review has turned into a full-fledged investigation, antitrust experts said.

Neither CA nor the Justice Department would comment on the details of the probe.

"We're planning on meeting with the DOJ as soon as practicable," said Douglas Robinson, a spokesman at CA's investor relations division. CA President and Chief Operating Officer Sanjay Kumar planned to meet with Justice Department officials in Washington as early as last week, Robinson confirmed.

VSE users oppose merger

Several users have written letters to the government opposing the merger, while others have expressed their antitrust concerns on an Internet-based VSE discussion group [CW, June 12]. Larry Moore, president of the Tennessee VSE Users Group and a senior systems programmer at Hamilton County's data processing department, sent one letter.

"We feel that it's a monopolistic move" that will hurt VSE users, Moore said. "They'll only have one source [for VSE software] rather than competition between two sources, CA and Legent."

It is not clear what impact the write-in campaign has had on the Justice Department's actions. The only antitrust concern publicly raised is that CA and Legent have overlapping software products in the VSE operating system market, including niches such as tape management, reporting, scheduling and security (see chart).

Kumar told attendees at a Bear, Stearns & Co. technology conference last week that the Islandia, N.Y.-based software giant expects to wrap up the Legent deal by August, which Robinson confirmed. CA's cash offer is scheduled to expire at midnight on July 6.

Wall Street has been skittish about the deal, as illustrated by the $4 to $5 "spread" between Legent's current stock price ($43) on the NASDAQ exchange and CA's $47.95-per-share tender offer.

Some investment bankers said they fear the Justice Department's information request suggests plans for a lawsuit to block CA's acquisition attempt, though the prevailing wisdom is that at worst CA may be forced to divest a few low-revenue products.

If the Justice Department takes issue with the proposed merger, it has several options, including requiring CA to divest or license the overlapping products to another firm to restore competition, said Marc Schildkraut, a partner at Howrey & Simon in Washington. It is also possible that the investigation will conclude without any antitrust charges being filed.

"It depends on how serious the overlap is, the level of competition, the ease of entry of other competitors and other factors," Schildkraut said. He said the Justice Department will "listen very carefully to what the users say and take them seriously, although the users will not dictate the outcome of the investigation."

Robinson said he does not think CA will "have to cross that [divestiture] bridge. If it does come to that, we'll take a look at our options and proceed from there."

Divestiture candidates

Analysts have identified overlap between the following CA and Legent products. If the Department of Justice were to force CA to divest any of these packages, those with lower revenue may be dropped.

Category	Product	1994 revenue*
Automated operations	Legent Prevail automation	$30 million
	CA-Opera	$5 million
Software change management	Legent Endevor	$50 million
	CA-Panvalet	$10 million
Tape management	CA-1	$175 million
	Legent Epic	$15 million
Job scheduling	CA-7, CA-11	$130 million
	Legent JobTrac/ Prevail Rerun	$8 million

*Estimated

Source: Morgan Stanley & Co., New York

Talkback@cw.com

What questions would you like to pose to CA and Legent executives about the merger? Is it good or bad news for users, and why? Sound off to us at talkback@cw.com. We'll publish a sampling of reader opinions in an upcoming issue.

AT&T, BBN belly up to the Internet bar

Alliance will offer access services

By Ellis Booker

AT&T Corp. bought itself a seat at the Internet services table last week, with a three-year, $120 million alliance with Internet access and services company BBN, Inc.

"BBN is the nation's largest provider of Internet services to business and organizations, and AT&T is the recognized leader in network quality and reliability," said Tom Evslin, AT&T's vice president of gateway services.

The companies said the dedicated access "managed Internet" offering would be an exclusive partnership, although each company reserved the right to combine strengths with other vendors for additional Internet-related services in the future.

The deal between AT&T and BBN Planet Corp., BBN's Internet services subsidiary, also answers recent criticism that AT&T lacked a soup-to-nuts Internet access and services product. "AT&T has been cautious with Internet involvement," said Paul Turner, executive director of the Price Waterhouse Technology Center in Menlo Park, Calif.

Interpretation

AT&T will resell BBN Planet's InterNET Advantage and value-added services. BBN Planet will be the exclusive provider of dedicated (56K bit/sec. and above) Internet connectivity and security services to AT&T.

Tough competition

By comparison, MCI Communications Corp. has offered a panoply of Internet access, World-Wide Web hosting and back-end business support products for Internet commerce since February.

For BBN, the alliance means it gains access to the 12,000 people in AT&T's Business Communications Services sales force. It will offer BBN Planet services as of Aug. 1 in selected cities and generally throughout the U.S. by Sept. 1.

Executives from both companies said the greatest revenue would come first from network access sales and later from ancillary services such as Web development and monitoring.

During the announcement of the alliance, Evslin was asked pointedly about the relationship between AT&T's Internet and Web offerings and its Network Notes product, a public server version of Notes that is in beta testing and will be commercially available at the end of the year.

"I don't think the [Notes] strategy has changed," he said. "Rather, the growth of the Internet has created a context for it." Network Notes, Evslin said, would be aimed at "well-defined user groups" that need complex access controls.

Briefs

Broderbund results up

For the third quarter, Broderbund Software, Inc. in Novato, Calif., said net income for the quarter totaled $7 million. To date, CD-ROM product sales account for approximately 80% of Broderbund's revenue this year.

Record quarter for 3Com

3Com Corp. in Santa Clara, Calif., announced record fourth-quarter revenue of $385 million, compared with last year's $241.5 million. Quarterly net income was $47.5 million, up from last year's $27.2 million for the same quarter.

Cabletron posts increase

Cabletron Systems, Inc. reported 1995 first-quarter revenue of $240.8 million, a 33% increase from last year's $180 million. The Rochester, N.H., modular hub developer reported first-quarter income of $48.3 million, up from 1994's $36.1 million.

SHORT TAKES Apertus Technologies, Inc. in Eden Prairie, Minn., plans to acquire BlueLine Software, Inc. in Minneapolis. . . . The Hart-Scott-Rodino waiting period relating to IBM's proposed merger with Lotus Development Corp. has expired. IBM's tender offer for Lotus is set to expire on July 3. . . . Madge Networks in San Jose, Calif., has agreed to acquire the outstanding shares of Tel Aviv-based Lannet Data Communications Ltd. for approximately $300 million. The deal reportedly makes Madge the fifth-largest networking company in the world.

Announcing the

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After three months, hundreds of entries and 27 finalists, it's our pleasure to introduce some of the best software developers in the world: the winners of the first annual Apple Enterprise Awards.™

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- Departmental/Workgroup Client/Server:
  - Alex, Brown & Sons Incorporated, *Alex, Brown Trading System (ABS Trading System)*
- Education/Government Client/Server:
  - University College Dublin, *WEST (Web Educational Support Tools) 1.0*
- Enterprise Client/Server:
  - Control Data Systems, Inc., *Control Data Advisor*
- Mobile Computing (Business, Education and Government):
  - Centric Systems Corporation, *The Mortgage Market*
- Multimedia Kiosk (Business):
  - Andersen Windows, Inc., *The Andersen Window of Knowledge® System*
- Multimedia Kiosk (Education and Government):
  - Penn State University, *Penn State Alumni Association Information Kiosk 1.0*
- Publishing (Business, Education and Government):
  - Second Look Computing of the University of Iowa, *Arachnid 1.0*

The Apple Enterprise Awards were created by Apple Computer, *Computerworld* and MacIS to celebrate the efforts of those software developers whose applications have made everyone's life just a little bit easier. Entries were evaluated by a panel of independent judges on how they provided an effective solution to business and organizational problems. One winner in each of the nine categories was announced at the awards ceremony during PC EXPO in New York by Apple President and CEO, Michael Spindler. Look for a special supplement in *Computerworld* to showcase the winning applications.

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Remote Control

Install and configure the Windows 95 operating system on your users' PCs without leaving your desk. Control which parts of the system you install, and automate the procedure. You can decide who has network privileges, access to control panels and even which applications users have access to. The Registry lets you efficiently manage and support each of your user's desktops. You can change individual user preferences and privileges. You can make global changes that affect all users. You can remotely monitor systems and performance for more efficient troubleshooting. By using network management applications designed for Windows 95, you can access the Registry locally and remotely. Windows 95 comes with agents for many management standards such as Remote Procedure Call (RPC), Simple Network Management Protocol (SNMP) and, shortly after release, Desktop Management Interface (DMI).

Crowd Control

You control network access from a single location, where validated user logon is authenticated by the security structures of Windows NT™ Server and Novell® NetWare® User Profiles allow different users to log onto any connected PC and see "their own" desktop. Each name and password retrieves a user profile from the Registry, dictating desktop layout, fonts, network connections, shared resources and access privileges to applications and data. Users can work productively anywhere on the network.

For a Closer Look

Look no further than WinNews. It's the on-line, electronic newsletter that updates you with the very latest information on everything you need to know about making the move to Windows 95. To subscribe e-mail us at enews9@microsoft.nwnet.com with only the words **Subscribe WinNews** in the text of your message.

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WHERE DO YOU WANT TO GO TODAY?™

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'net losses

During "Take your daughter to work" day recently, one of our employees set his 9-year-old daughter in front of a PC that was logged on to the Internet. He quickly explained the keyword search capability of the navigation tool we use and left her to her own devices.

She wanted to tap into some forums for girls her age. So she typed "girls" into the search box. A few clicks of the mouse and several screens later, she downloaded nude images of women. It was that easy and that accidental.

Whether Congress passes laws restricting the publication of pornography on the 'net, it is clear that the feds are being drawn slowly but inexorably into the larger realm of electronic regulation, which could spill over into the embryonic world of electronic commerce. My concern is that efforts to regulate smut — a worthy endeavor — will give control-hungry feds authority over what heretofore has been a truly free marketplace, maybe one of the last.

Consider the government's stepped-up investigation of Microsoft's on-line plans. Microsoft wants to include access to its still-unborn network in Windows 95. Users will still have to subscribe to the network and pay extra for it just as they would with the ubiquitous free sign-up disks from America Online.

Regulation here means the government would be stepping in to prevent a company's domination of a market in which it doesn't have any presence and where there are very well-established competitors.

You get the sense that the regulation addicts are just getting started in this new area.

New in '95

There's something new and different in your issue of *Computerworld* today. We've added colored tabs at the edges of our pages to serve as navigational aids to help you cruise through the publication.

The addition of these tabs marks the first of a series of changes we will be rolling out during the next few months. Each is designed to make it easier for you to find your way through *Computerworld*.

Other changes on the front include a much-needed overhaul of our contents page as well as other sections of the paper. We are even investigating replacing the font we use in our text with one that is easier to read. We want you to get the most from the precious time you spend with us.

As we unveil these changes, I'll announce them in this space. And you can tell us what you think of them. Send E-mail to letters@cw.com, or fax us at (508) 875-8931.

Bill Laberis

Bill Laberis, *Editor in Chief*
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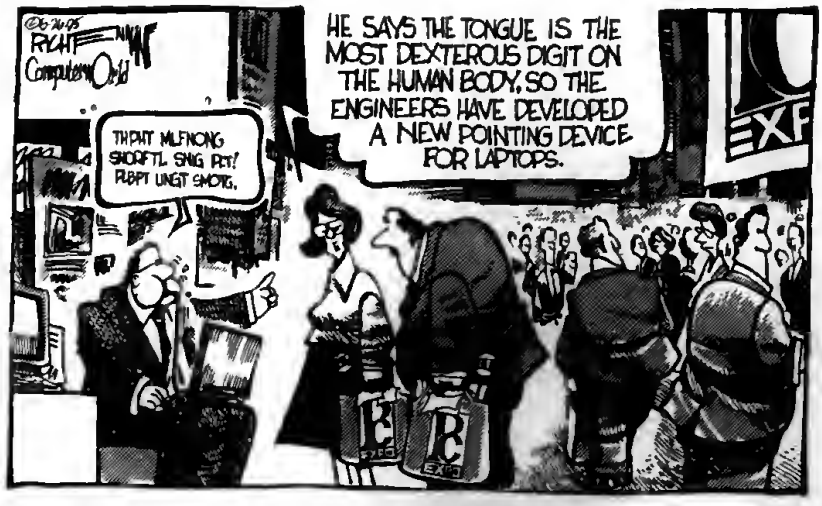

Faulty strategy

While I agree with Michael Schrage's "Don't forget incentives in groupware strategy" [CW, June 5], I take exception to his statement that companies won't share information just because they've gone on Notes. My experience has been just the opposite.

Many groups just need the proper tool to get started. My experience has shown that in a Notes environment, people either become one of the contributing group or are left out in the cold.

Groupware forces a culture change in the companies that implement it. These changes can add tremendous value to re-engineering efforts by facilitating communication and flattening the traditional hierarchical structure.

Those companies that fail with Notes do so not because of the lack of formal incentives but because they fail to see the product to solve real business issues.

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If we stretch the definition of groupware to mean any software that collects small pieces of data from large numbers of people and forms an overall view of some corporatewide system, then IS professionals have been dealing with the problem of "if you build it, they won't come" for a long time.

I've been involved with several implementations of material requirements planning systems. The most important factors for success are the professionalism of the company staff and involvement of management. If the staff did not keep good records of inventory before they bought software, they did not keep good records after they bought software.

Schrage made his point eloquently, but his observations are not original, nor are they confined to groupware. What is depressing is that this phenomenon keeps repeating.

Rick Jette
Systems administrator
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Captive audience

Readers got the straight story about who the rightful rulers of our industry are: buyers, not executives at solution suppliers ["Who's the boss?" CW, June 5]. But taking that control from the biggest suppliers requires a deeper look at relationships than your tale about Computer Associates.

CA doesn't maintain all those acquired customer assets because the customers are happy; many sites, such as those now running The ASK Group's Manman software, are captive because switching to a $500,000 manufacturing system is more costly than weathering poor service. Their fear and consternation remain unresolved as CA's support for Manman recedes.

When companies bloat to the size of Oracle or Computer Associates, they give up their regalness only when word gets out about their subpar performance. Look closer at customers of these two vendors, and you'll see managers who want something better than what they're enduring — and hope for a green mag on their desks when problems appear.

Ron Seybold
Austin, Texas
rseybold@zilker.net

Gates has a vision

Charles Babcock misses the point in his column about Microsoft's backing off from the Intuit deal ["Microsoft avoids a fight, IS wins," CW, June 5].

Microsoft is a thing of beauty and history in the making. Bill Gates is a visionary. He is one of the few who has the knowledge and resources to be the player in the information revolution.

While Babcock wants Microsoft to pay attention to corporate America and IS, Gates is forging way ahead of his competitors. Sadly, the competition and press don't like it when corporations become as powerful as Microsoft. Suffice it to say, Gates and Microsoft have become ubiquitous due to their creativity, superior products and marketing savvy.

Microsoft wants to be a major player in the electronic world. Can you fault it for that? I, for one, am looking forward to the creativity it brings to that area.

Kenneth Leebow
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KLVIP@AOL.COM

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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Who's afraid of software patents?

Robert P. Bell

Now that the U.S. Patent & Trademark Office has given the official green light for software-related patents, some software developers have gone ballistic. In Internet postings and other forums, they argue that software patents will retard innovation, squash the small developer and generally bring an end to the American Way of Life as we know it.

Underlying this concern is that, with the apparent demise of "look and feel" copyright protection in *Lotus vs. Borland*, patents may become the best way to protect software inventions.

I can understand why some software developers are upset. Copyright protection has some advantages, such as being fairly inexpensive to obtain. Moreover, a case of copyright infringement requires proof that a defendant did some copying; insulating your software design staff from outside code sources may be sufficient protection. Patents, on the other hand, require no such proof. You can be sued for infringement on a patent you've never seen or heard of.

Software patents will not bring the apocalypse. They might even help the "little guy" inventor.

But the critics underestimate the advantages of patent protection for software. Other fields have survived and thrived under our patent system. Consider the following points:

- **Software patents were being issued anyway under other guises.** Now the Patent Office doesn't have to pretend they don't exist. By facing this issue squarely, the Patent Office has the opportunity to more consistently issue *valid* software patents. The agency is preparing to hire computer science majors (a break from long-standing tradition) and create a dedicated examining group equipped with "prior art" files from the software field.
- **Patents are easier to adjudicate.** The patent field has more than 200 years of legal precedent to help gauge the scope and validity of claims. Patent claims are printed for all to see, interpret and design around. In contrast, the more nebulous "look and feel" copyright doctrine was a new, judicially created doctrine with no precedent history. Patent claim interpretation is much less dependent on which judge you get.
- **Monopolizing the software field with patents won't work.** Consider Beta vs. VHS, Macintosh vs. the IBM PC or Polaroid vs. 35mm cameras: in all three cases, less sophisticated, nonproprietary technologies have prevailed. Any software developer who attempts to "force" the marketplace to buy products through patent monopolies will eventually be history. (Bill Gates, are you listening?)
- **Patents don't always favor the "big guy."** Remember that Microsoft lost a patent case to tiny Stac Electronics. The patent system may actually *favor* the small inventor. Small companies can litigate a patent suit cheaply on a contingency fee basis and have a much greater chance of eliciting jury sympathy when going up against Big Business.

Regardless of whether you favor or oppose software patents, it appears they are here to stay. Given that it's not possible to "opt out" of the intellectual property system, the best strategy is to establish your own patent portfolio, exploit it and defend it.

If you get sued, your patents can be valuable weapons to force a settlement. Moreover, if you are a small start-up, you can be sure that any possible buyout suitors will be keenly interested in the contents of your patent portfolio.

Bell is a patent attorney in Alexandria, Va. His Internet address is robertbell@delphi.com.

An ancient technology makes a snappy comeback

Max D. Hopper

As PC users, we've become blasé about the rate of advancing technologies and declining costs in the small systems domain. And understandably so, because we have been careening down the cost/capabilities curve in Gordon Moore's giddy sleigh ride for so long that we expect to be continually astonished.

It's difficult to get excited by what seem like weekly increases in Pentium clock speeds. 133 MHz? *Yawn*. So what, when Intel's P6 is waiting in the wings and equivalent CPUs from other vendors are not far behind? What about hard drives? Forget megabyte storage capacities. One-gigabyte drives are going for peanuts today. And how long are we going to have to plod along with 28.8K bit/sec. modems? We want more, faster, better and cheaper, and we want it now.

Yet in our roles as corporate IS managers, we've become tolerant of the torpid pace of technology advancements in the world of mainframes and large servers. We practice patience with Zen exercises such as watching paint dry. We are easily impressed by incremental improvements and grateful for the crumbs of innovation vendors occasionally toss our way.

Of course, we are thrilled at the prospect of CMOS technology and parallel processing architectures applied to mainframes. There's an obvious opportunity for improvement in these systems. But we don't generally expect quantum leaps in the mature, large-scale systems arena. And the last place we would expect a breakthrough is in tape-based data storage media. Most of us long ago relegated tape systems to the same moribund status as the archival data we traditionally consign to them.

So imagine my surprise in encountering just such a tape breakthrough during a recent visit to StorageTek. By combining the helical scanning technology of video tape-deck heads with the high-density properties of a new metal particulate tape formulation, their cartridge system offers levels of data density and storage capacity never before attained from tape.

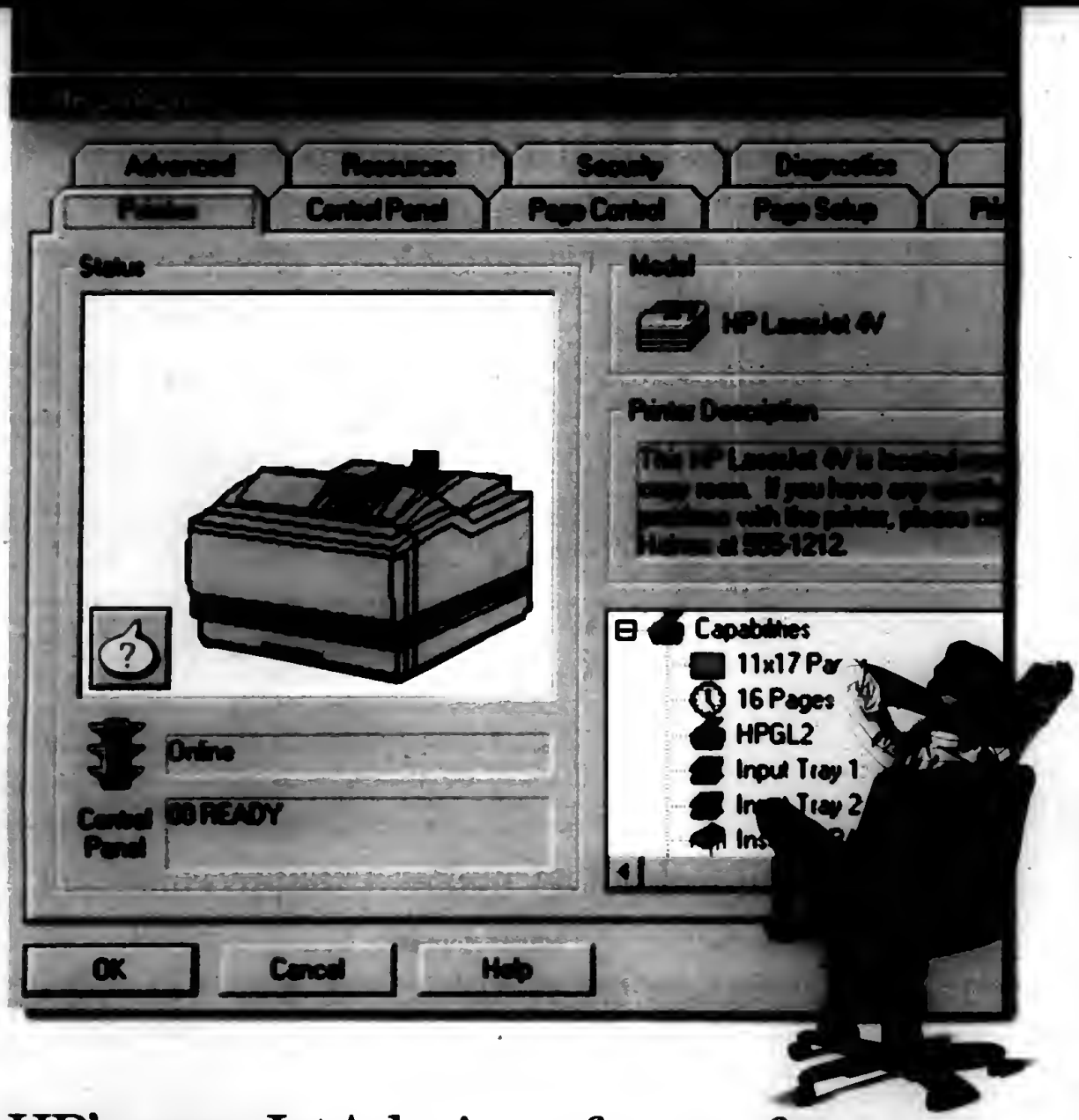
These cartridges can store up to 50G bytes of uncompressed data — 250 times the capacity of a standard 18-track linear cartridge and 125 times that of a 36-track cartridge. Moreover, the system's rapid random-access seek times enable near on-line availability of stored data. While search times are not up to the rate of high-speed disk drives, unit storage costs are substantially lower. From a functionality and total cost perspective, this tape system may offer advantages over optical disc approaches.

In all, this technology seems ideally suited for terabyte-scale data warehousing applications and IS situations where there is a recurring need to access and manipulate semi-active databases for data mining purposes. These are increasingly vital capabilities for banks, retailers, insurance companies and a host of other business with huge databases.

Here, just when we need it, is a whole new solution from a technology we had virtually written off.

Now if only some enterprising vendor could find an equally potent breakthrough for emitter-coupled logic circuit technology so we could slow the flow of mainframe conversion dollars. Alas, I suppose such expectations cross the border of optimism and delusion.

Hopper, former chairman of AMR Corp.'s The Sabre Group, is principal at Max D. Hopper Associates, a consultancy in Dallas.



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*Complete feature set not available for all operating systems listed. [1] In Canada, call 1-800-387-3867 Dept. 9313. HP JetAdmin information is available on the internet at http://www.hp.com/info/9313 ©1995 Hewlett-Packard Company PE 12647

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Office applications get new look in wake of Windows 95

By Stuart J. Johnston

■ As Microsoft Corp. readies Windows 95 for release, the company is leaving little to chance: It is making certain that everything, including its own applications, is ready when the system ships in August.

Company officials early this month said Microsoft will release Office 95 Standard Edition productivity suite, which will include new versions of Excel, Word, PowerPoint, the basic Exchange client and the Schedule+ calendaring software, within 30 days of the Aug. 24 ship date for Windows 95 [CW, June 12]. A new version of Microsoft Project is set to ship at the same time.

Microsoft's Excel: *A data mapping feature will be added to the Office 95 Standard Edition*

The Office 95 Professional Edition, which will include a new version of the Access database, will ship four to six weeks after the Standard Edition.

Users give thumbs-up

Early users of the beta versions were generally enthusiastic, particularly about the improved integration and other common features among Microsoft's applications.

These include a new feature called an Office Binder, which enables users to store — in a single file — a collection of related documents and files. All users can then access the file over the network.

The applications will also share a new Answer Wizard user help function that will perform "fuzzy" or approximate searches for information based on a question typed in English. For example, a user might ask, "How do I print sideways?" The Answer Wizard will pull up information related to printing in landscape mode, thus relieving the user from having to know some of the arcane language needed to use the software.

"The tighter integration [of Office 95] with Windows 95 will be welcome. The idea of it evolving more as a personal document manager when building compound documents has very strong appeal," said Randy Dugger, director of information systems at Liposome Technology, Inc., a pharmaceutical company in Menlo Park, Calif.

Besides increased performance, shared features, 32-bit pre-emptive multitasking and support for long file names, the individual applications include new features. Some of these, such as AutoCorrect and the spell checker, which puts red lines underneath words it thinks are misspelled, are also available in other Office applications.

Word will offer the following features:

- An improved AutoCorrect feature. This lets users create exception lists for words they do not want "corrected" as typographical errors.
- A WordMail feature that enables Word to be used as an editor for Microsoft's Exchange to compose and read electronic mail.
- An address book so users can store commonly used addresses for use in letters. The address book also tightly integrates with Exchange's personal ad-

Office, *page 40*

Norton Utilities beta not for faint of heart

By Timothy L. Trimble

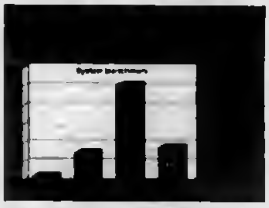
Symantec Corp. is riding on Microsoft Corp.'s coattails with its release of Norton Utilities Preview for Windows 95 Preview.

The $30 price tag easily fits in with Microsoft's pricing for the Windows 95 Preview program.

PRODUCT test DRIVE

At first this may seem like a good concept, but it turns dangerous when implemented. The package Norton Utilities Preview for Windows 95 Preview can be appropriately translated to Norton Utilities Beta for Windows 95 Beta.

If you saw a street sign that said "Test construction on a test road ahead," would you continue driving or turn around? Many brave-at-heart souls are still traveling a rough road as a result.



Symantec's Norton Utilities: *It now provides a 32-bit system performance benchmark*

Tough start

The evaluation of the Norton product began with a smooth preinstallation tune-up of the Intel Corp. f486 66-MHz test computer. The tune-up ensured that enough disk space was available. Everything went fine until the fourth disk caused a General Protection Fault error. Several calls to technical support led to delivery of a second set of disks.

However, the attempted installation with the new disks again resulted in a problem with the fourth disk. This time, the installation program kept asking us to place the disk into the drive, even though it was already there. Another call to technical support resulted in copying all six disks to a temporary directory again. This time the installation went smoothly.

After the installation, Windows 95 began to experience major problems. When booting, Windows 95 presented an "Invalid VxD dynamic link call" error and asked to continue or abort.

Once in Windows, any attempt to print resulted in a system

Norton, *page 44*

Users applaud Apple's bus route

By Lisa Picarille

Systems from Apple Computer, Inc.'s recently introduced Power Macintosh 9500 series are the first to have switched from the company's proprietary Nubus bus architecture to the industry standard Peripheral Component Interconnect (PCI) bus. All of Apple's future machines will support PCI.

The upside for users is more choices when it comes to purchasing graphics and sound cards and accelerator and video boards, as well as networking interface add-ins from third-party developers.

The downside is that the PCI slots will not run cards previously made for older Macintoshes or Power Macintoshes that used the Nubus architecture.

More money, more options

But users said they think the trade-off is worth it.

"Yeah, I know that I will have to spend more money to get some new PCI cards," said Brian Comnes, manager of the Information Technology center at DHL Airways, Inc. in Redwood City, Calif., which owns more than 700 Macintoshes. "But instead of just a handful of choices in each category, I now have many more options. This competitive type of market is always good for users."

Users saw other reasons to be excited about Apple's decision.

"This means Apple is listening to users' demands," said Bob Anderson, an information systems manager at A. O. Smith, Inc. in Milwaukee, which has more than 600 Macintoshes. "They want to make the platform more attractive, and having more choices is a way to do that."

Other users claim that having an industry standard bus on the Power Macintoshes might prove to be another reason to purchase systems from Cupertino, Calif.-based Apple.

"The more Apple can make its systems fit in with other standards we are using, the more likely we are to consider Power Macs when making a decision," said an IS manager at a large East Coast investment banking firm, who asked not to be identified.

Apple hops on board the PCI bus with leading vendors

Graphics acceleration/imaging
- ATI Technologies
- Wired
- Diamond Multimedia Systems
- Precision Digital Images
- Linotype-Hell AG
- Miro Computer Products
- YARC Systems
- Radius

Networking
- Apple
- Asante Technologies
- Farallon Computing
- Interphase
- Hermstadt GmbH
- Neutral
- Spectra Systems
- Rockwell Network Systems

Storage
- MicroNet Technology

MS-DOS compatibility
- Orange Micro

Automation a SNAP for UJB Financial

System will help bank track accounts, cross-sell products

By Thomas Hoffman
PRINCETON, N.J.

In simpler times, New Jersey banks just had to battle one another for business. But now, bigger bullies from outside the Garden State are moving in, and locals such as UJB Financial Corp. have to be more creative than ever to hold their ground.

UJB Financial, New Jersey's second-largest bank holding company, with $15.4 billion in assets, is used to the likes of rivals such as First Fidelity Bancorp/NJ, National Westminster Bank USA and Midlantic Corp. But it is now jostling for investor dollars with nonbank players such as AT&T Corp., General Electric Co.'s GE Capital Corp. unit and Merrill Lynch & Co.

First Valley Bank's Tom Bamberger: *'We're very impressed with SNAP'*

To hold its turf against these outsiders, UJB Financial will next month roll out a sales automation package to 300-plus customer relationship officers in its New Jersey and Pennsylvania offices. Its goal is to improve the ability to track commercial customer accounts and cross-sell products more effectively.

"We're in between two 500-pound gorillas [New York and Philadelphia]," said Walter M. Horsting, vice president and chief administrative officer in wholesale banking at UJB Financial, which operates United Jersey Bank in New Jersey and First Valley Bank in eastern Pennsylvania.

UJB Financial plans to install SNAP, a DOS-based sales automation system from Sales Technologies, Inc., an Atlanta-based division of The Dun & Bradstreet Corp. The software should help the bank consolidate its disparate call systems throughout the mid-Atlantic region.

SNAP decision

In the past six years, UJB Financial has acquired 27 regional banks. Those acquisitions, Horsting said, provided UJB Financial with a variety of sales systems, ranging from relatively primitive customer account index cards to Lotus Development Corp. 1-2-3 spreadsheets. The SNAP system will give UJB Financial's units a consistent call system.

Horsting said UJB Financial picked SNAP for its ease of use and ability to share data seamlessly with the bank's D&B databases. The company piloted the DOS-based software with 40 customer relationship officers at its First Valley Bank branches from last August to November.

"We're very impressed with SNAP. With it, we're able to track customer purchasing trends, which is something we really couldn't do before," said Tom Bamberger, executive vice president and senior loan officer at First Valley Bank in Bethlehem, Pa.

ON SITE

UJB Financial Corp.
Princeton, N.J.

Challenge: To consolidate disparate sales systems into a single, standardized platform to improve the bank's cross-selling opportunities and track customer purchasing patterns more effectively.

Technology: Sales Technologies' SNAP for DOS sales automation software, followed next year with an upgrade to Sales Technologies' SNAP/VirtualOffice Windows-based package.

Results: UJB customer relationship officers can now model an asset customer prospect three weeks faster.

Later next month, the bank will roll out DOS-based versions of the software to 260 additional customer relationship officers at UJB and First Valley, Horsting said. Windows-based versions of SNAP will be delivered sometime next year, he added.

When UJB Financial first looked at sales automation software in 1993, Sales Technologies did not have a Windows-based version, Horsting said. In addition, UJB Financial did not have the operating systems or hardware to run Windows, he added.

Customers-to-be

The SNAP software will run on a mix of Intel Corp. 80386 and 1486-based workstations. Local databases will be linked via T1 connections to a central SNAP database that runs on an OS/2 LAN at the firm's Ridgefield Park, N.J., data center, according to Donna Sadlon, a systems analyst and sales automation project manager at UJB Financial in Ridgefield Park. A customer database will be added to the network by August, followed by a prospect database in November, Sadlon added.

UJB Financial expects to recoup three to five times the cost of software during the next three years, Horsting said.

Enabling technologies such as sales automation tools to assist in cross-selling are becoming hot commodities in banking, analysts said. "Banks have historically been order takers," said Beth Summers, a senior bank analyst at Ryan, Beck & Co. in West Orange, N.J. "The key point is being able to manipulate customer databases and the cross-selling behind it."

3M Co.'s Visual Systems Division has introduced the 3M MP8020 Multimedia Projector.

According to the Austin, Texas, division, the portable projector works with both computer and video sources. It has a 1.6:1 power zoom lens and a 250-watt halide lamp for projecting in lit rooms.

The projector features four inputs, two for computer data and two for video. It includes two stereo audio inputs and a built-in speaker with a three-watt amplifier.

The 3M MP8020 Multimedia Projector costs $9,550.

▶ *3M Visual Systems Division*
(512) 984-1800

Janesway Electronics Corp. has announced Print Screen 2.0 for Windows.

According to the Mount Vernon, N.Y., company, Print Screen 2.0 for Windows lets users print everything on any Microsoft Corp. Windows, Windows NT or Windows for Workgroups screen by pressing Print Screen. It includes an Auto-Save function that saves the screen to a Windows-readable .BMP file.

Print Screen 2.0 for Windows costs $20.

▶ *Janesway Electronics*
(914) 699-6710

Xerox Desktop Document Systems, a division of Xerox Corp., has introduced TextBridge Professional Edition 3.0 for Windows, an optical character recognition (OCR) software product.

According to the Palo Alto, Calif., company, TextBridge Professional Edition 3.0 for Windows lets desktop users reproduce, scan and proof original document layouts with fully editable text, tables and pictures, without exiting a word processing application.

The product features Xerox's Document Recognition Technology OCR engine, which reconstructs scanned documents in fully editable form, such as tables, multicolumn text and graphics.

TextBridge Professional Edition 3.0 for Windows costs $249.

▶ *Xerox Desktop Document Systems*
(415) 813-6800

DeltaPoint, Inc. has introduced Drag 'n Draw 1.0 for Windows, structured drawing and diagramming software.

According to the Monterey, Calif., company, Drag 'n Draw 1.0 for Windows lets users create business diagrams, flowcharts and designs.

It features symbol libraries that include technical, business and scientific symbols, drawing tools and a customizing and linking system.

Diagram styles include flowcharts, network diagrams, organizational charts, quality control diagrams and fishbone charts.

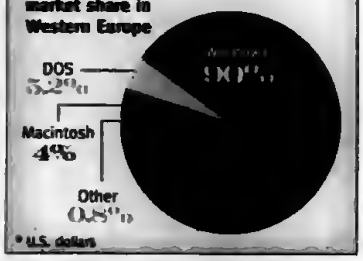
Drag 'n Draw 1.0 for Windows costs $149.

▶ *DeltaPoint*
(408) 648-4000

Data View

At its annual conference, the Software Publishers Association, Europe, announced that total PC software sales in Western Europe had reached $916.1 million* in the first quarter. That figure is up 4%, from $906.23 million* in last year's first quarter.

PC applications market share in Western Europe



* U.S. dollars

Office gets new look

CONTINUED FROM PAGE 39

dress book and Schedule+.

"I like the squiggly red underline you get when you misspell a word," said Briscoe Stephens, coordinator for space sciences in the Advanced Scientific Information Systems group at NASA in Huntsville, Ala. Stephens said he also likes the address book feature.

Features added to Excel include the following:

- A data mapping feature that can be used to generate maps of the U.S. showing data distributions. This feature will also be available in the Access database.
- The ability to share portions of a spreadsheet with other users simultaneously. Excel provides systems to handle data input conflicts.
- A function that will convert a flat file database created in an Excel spreadsheet to an Access relational database file.

Features in the PowerPoint presentation graphics package include the following:

- A presentation conferencing feature that lets users deliver presentations across a network.
- A meeting-minder feature that lets users take notes right on a slide.
- A multiple "undo" function so users can undo several steps when creating or editing a presentation.
- The ability to export slides directly to Word.

Dugger described the network conferencing feature as "very impressive to see."

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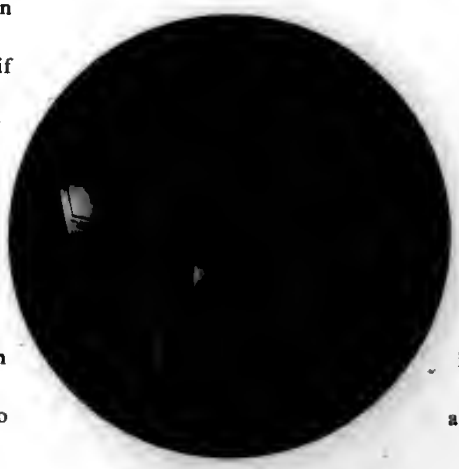

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Norton Utilities beta not for faint of heart

CONTINUED FROM PAGE 39

freeze and required a keyboard reboot. Because the test computer had Windows 95 installed over the top of a previous Windows 3.11 installation, we determined that a final attempt was needed with Windows 3.11 removed.

This final drastic measure required the following steps:

1. Back np all data files.
2. Reformat the hard drive with the latest version of DOS.
3. Install Windows 95.
4. Install Norton Utilities Preview for Windows 95 Preview.
5. Install any other software that we wished to test with Windows and Norton.
6. Restore data files.

Painful? You bet, but worth tha effort. The result was a "clean" test environment that was not encumbered by a history of DOS, multiple device drivers and configuration files for Windows 3.11.

PRODUCT test DRIVE

Feature description

One of the first features that appears on the Windows desktop is the new Norton System Doctor. This featnre presents a set of tool-bar-type icon gauges and stoplights for displaying the statas of the computer system elements.

The default display shows information such as CPU nsage, hard drive free space, hard-disk fragmentation and the amount of virtual memory that is free. This can be expanded to include monitoring for 25 conditions. The type of information displayed can be valuable for testing and performance monitoring.

Another feature of the Norton System Doctor is the ability to set alarms for various conditions. The alarm can be presented as pop-up information and can include assigned sound bites. For complete hands-off monitoring, various utilities can be automatically taunched when a defined condition occurs.

The other expected Norton Utilities features are also included but with tbe robustness of Windows 95. They now can use Windows 95's long file names and 32-bit capabilities. The System Information program provides a 32-bit system performance benchmark, which compares the performance of the computer with a 90-MHz Pentium system.

The new Space Wizard examines the hard drives for temp files, backup files, infrequently used files, duplicate files and large files and works with the user to identify ways tn free up more disk space.

In conjunction with the Speed Disk optimizer and the Disk Doctor for resolving drive and file problems, Norton Utilities attempts to provide an optimized environment for running Windows 95. The safety features of Norton Utilities Preview include the nse of Emergency boot disks with a set of extended DOS versions of Disk Doctor, Norton Diagnostics, UnErase, UnFormat and Disk Edit.

Overall, Norton Utilities Preview is a great set of ntilities and monitoring tool for anyone serinus about evaluating the power of Windows 95. However, it comes at tbe cost of extended effort and sweat to achieve a stable system. If you have more productive things to do and you tend to wait for Version x.1 of a software release, leave the driving to the more daring.

Timothy Trimble is a senior business analyst at Hunter Industries in San Marcos, Calif. He can be reached via the Internet at ttrimble@powergrid.electricitl.com.

Briefs

3M expands PCMCIA line

3M Co. in St. Paul, Minn., is expanding its line of PCMCIA cards for portable PCs. PCMCIA cards, also known as PC cards, are small, removable devices used to attach a modem, network adapter or hard disk to a portable computer.

The new cards — the 40M-byte FlashDisk and the 170M-byte Hard Drive — add removable data storage to mobile and portable computers equipped with the PCMCIA Type II and Type III slots. The cards are compatible with laptop, notebook, subnotebook, handheld computers and personal digital assistants made by several leading manufacturers.

Suggested prices for the cards, which are available through the company's network of distributors and resellers, are $1,949 for the 40M-byte FlashDisk and $599 for the 170M-byte Hard Drive card.

David vs. Goliath?

The Committee to Fight Microsoft has announced it has asked the attorneys general of all 50 states to ban the sale of Windows 95 due to what it described as "classic consumer fraud." The reason for the accusations, the committee said, is that it claims a *Wall Street Journal* columnist said Windows 95 will not run well in 4M bytes of RAM. "That means Microsoft will be targeting helpless home users and trying to sell them an 'upgrade' that simply won't work on their existing machines," reads the committee's statement. (Don't hold your breath on this one.)

New Wininstall on the way

OnDemand Software, Inc. in Naples, Fla., recently said Version 5.0 of its popular WinInstall software distribution application, which now supports file compression, will ship nn July 10. A new add-on product, WinInstall Remote, supports application delivery to remote PCs via dial-up modem or electronic-mail gateways.

Millions and millions sold

Microsoft Corp. Senior Vice President of Personal Systems Brad Silverberg recently claimed the company has sold 85 million copies of Windows.

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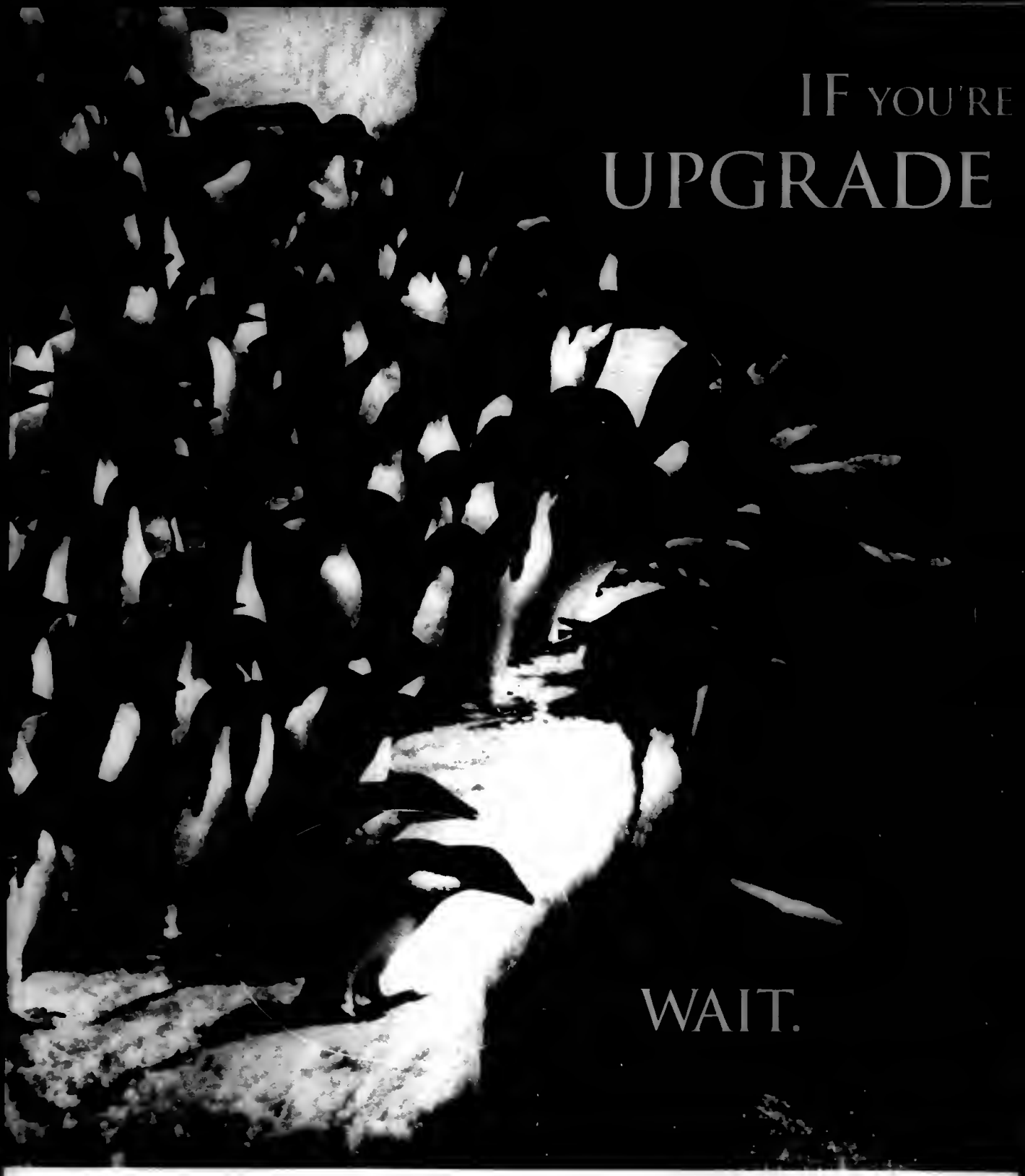

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Workgroup Computing

LANs • SERVERS • SOFTWARE FOR GROUPS

Cable management comes out of the closet

By Patrick Dryden

Northern Telecom, Inc. has tackled the mess inside most customers' network wiring closets, coming up with a way to let administrators alter physical LAN connections remotely and document the new configurations automatically.

This cable switching system, called DynaTrax, eliminates the need to manually alter connections caused by employee moves, adds and changes, and updates a database to help track the ever-changing infrastructure. Many intelligent switching hubs, however, now offer a similar capability, and that dilutes the appeal of Northern Telecom's option.

Questionable value

"This would have been a killer product a few years ago, but now the variety and plunging cost of switches makes the value of their solution questionable," said John McConnell, principal at McConnell Consulting, Inc. in Boulder, Colo.

But there are advantages to DynaTrax, which consists of a modular switch that can support up to 108 connections between user stations and hub ports. Cabling administrators run this "automated patch panel" via Windows-based control and database software.

This combination lets users control these low-level links without having to upgrade their hubs, Northern Telecom officials said. While DynaTrax enables changes at the wire level, hub vendors offer units that can manipulate connections logically at a higher level of the Open Systems Interconnection protocol stack through a switch or across the backplane of an intelligent hub.

Both approaches seem to appeal to potential users.

An information systems manager briefed by Northern Telecom said he believes DynaTrax makes sense for any site with 100 or more nodes and an expected life span of at least five years.

"This has more flexibility, and I'm not aware of any hub that documents changes," said George Mazza, manager of communication services at Fritz Cos., a San Francisco customs brokerage.

To differentiate the two management approaches, users should consider what they need to control, said Jill Huntington-Lee, principal at Brandywine Network Associates, a network management consultancy in Cinnaminson, N.J.

"Hub devices can make logical connections but can't control the wire," Huntington-Lee said. "Since cabling gets changed over time, you need to know exactly where they go in order to quickly fix such problems as cable faults."

If Northern Telecom explains DynaTrax clearly — as an intelligent cross-connector with visual control and automatic database tracking — then the system could appeal to anyone with large masses of cabling in one location, she said.

DynaTrax can be administered across a network or locally or remotely through a serial port. In addition to the Windows console program, an agent option enables interaction with enterprise network management consoles via Simple Network Management Protocol.

Modules can support Ethernet, Token Ring and Fiber Distributed Data Interface connections through its ports for unshielded twisted-pair cabling. DynaTrax is expected to ship in September at a cost of about $130 per connection.

Northern Telecom, Inc.
DynaTrax

A modular switch unit that links as many as 108 unshielded twisted-pair inputs from Ethernet, Token Ring or Fiber Distributed Data Interface nodes to their corresponding hub ports. Windows software controls connections and updates a configuration database automatically.

PURPOSE: To automate the execution and management of physical-level moves, additions and changes on LANs and remote networks

OPTIONS: Users can manage DynaTrax locally via serial port or remotely via modem or Simple Network Management Protocol

COST: About $130 per connection

AVAILABILITY: September

Microsoft tempts NetWare users with NT manager

By Laura DiDio

In another move to lure users from the NetWare environment, Microsoft Corp. last week began shipping a beta version of a utility for Windows NT Server that enables businesses to centrally manage mixed Windows NT Server and Novell, Inc. NetWare 2.x and 3.x LANs.

Directory Service Manager for NetWare eliminates the need for network administrators to assign multiple user log-ons and passwords in mixed Windows NT Server and NetWare 2.x and 3.x LANs, said Biki Malik, Microsoft's Windows NT Server product manager.

Analysts said Microsoft's strategy is clearly to use the utility as one more way to lure NetWare 2.x and 3.x users to the Windows NT Server camp and away from NetWare 4.x.

Underscoring this is the fact that Directory Service Manager does not support NetWare 4.x LANs and has no links to Novell's NetWare Directory Services.

"Maintaining two separate network administration models during a transition from one network technology to another can be painful and expensive," said Jamie Lewis, president of the Burton Group, a Salt Lake City consulting firm. "With the Directory Service Manager for NetWare, Microsoft is eliminating that burden and making it easier for users to transition from NetWare to Windows NT Server."

Directory Service Manager enables users to deploy a single password and account to access all NetWare 2.x and 3.x file, print and application resources on a Windows NT Server network.

One beta user, Carl Carrie, vice president of research at Tullet & Tokyo Forex, Inc. in New York, said his organization will deploy Directory Service Manager as it moves from its current NetWare LANs to Windows NT Server.

"The Directory Service Manager for NetWare will allow us to perform a smooth migration from NetWare to NT Server in incremental steps," Carrie said.

Directory Service Manager will ship later this year. Pricing has not been set.

Imaging systems almost a certifiable specialty

By Tim Ouellette

By the end of the year, imaging professionals will be able to polish their images by passing a certification test under development by the Computing Technology Industry Association (CTIA).

Lombard, Ill.-based CTIA, with the help of leading imaging and workflow vendors, is developing a certification test for information systems workers involved in developing and maintaining imaging systems.

An imaging system puts paper forms on-line for employees to manage and manipulate. The test, expected to be ready by December, will provide a baseline imaging competency for users and vendors (see chart), said Melanie Monsma, program coordinator for the test.

The test is very much needed to provide a basic groundwork, said Connie Moore, director of workflow, document and imaging strategies at BIS Strategic Decisions in Norwell, Mass.

"It will make a big difference in the distribution channels and resellers," Moore said. Vendors with an office equipment background especially need some sort of certification program to give them skill sets and credibility, she added.

Users intent on building their own imaging systems will be able to bring together a more organized staff with a common understanding of imaging.

"We would definitely be interested in this," said Loretta Goralczyk, imaging manager at American President Lines Ltd. in Oakland, Calif. Goralczyk said the company would like to see its imaging department totally certified. "Then we would have the in-house expertise" to build more imaging applications on the FileNet Corp. systems in place, she said.

"We have been looking to certify individuals, but how do you certify somebody in this technology when it is so open-ended?" she asked.

The CTIA includes more than 6,000 member companies. While working on standards for imaging and workflow, companies such as FileNet, Optika Imaging Systems, Inc., Wang Laboratories, Inc. and Xerox Corp. are also involved in developing this test.

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Backup offers stark choices

LAN server mirroring products reflect different needs

By Steve Moore
and Jaikumar Vijayan

■ Two recently introduced products — LANtegrity from Network Integrity, Inc. in Marlboro, Mass., and SnapShot Server from Vinca Corp. in Orem, Utah — highlight the choice users must make between two alternative approaches to server mirroring and backup.

Files inadvertently left open by users or still in use during backup are considered one of the major reasons for data backup failures [CW, May 8]. This is because very few applications allow files to be backed up while they are open.

Backup of live data is a major issue, according to consultant Patrick Corrigan, president of The Corrigan Group in Tigard, Ore. The relative lack of products that do this not only imposes restrictions on when data can be backed up but also on how it can be backed up, he said.

Divergent paths

The new products use different backup methods — one-to-one and one-to-many — which correlate to the number of production servers to backup servers in a LAN environment. Vinca's SnapShot Server uses a one-to-one approach; Network Integrity's LANtegrity uses one-to-many.

Each approach has its advantages, analysts said.

"If I have a mission-critical application with very high downtime costs, I would tend to go with a one-to-one server mirroring configuration," said Michael Peterson, president of Strategic Research Corp. in Santa Barbara, Calif. But in an environment with a number of distributed servers with low downtime cost, "then one-to-many would be adequate" because the cost savings in using a single server for mirroring would offset typical downtime costs across all the servers it is protecting, he said.

Users of both products pointed to additional relevant factors. "Using a product that cuts across both Novell NetWare and Microsoft [Windows] NT is important to us," said Frank DeVito, information systems manager at law firm Rogers & Wells in New York, which maintains 12 NetWare servers and five Windows NT servers.

Rogers & Wells is a beta user of Vinca's SnapShot Server, which is NetWare-oriented but will support Windows NT Server by the end of this year. DeVito explained that the added NT support "will let us use one product instead of two and reduce our support costs and learning curve."

With critical applications running 24 hours a day, Connecticut Mutual Life in Hartford, Conn., chose Network Integrity's LANtegrity for the one-to-many server mirroring ability, said Farid Najafi, a LAN engineer at the insurer.

"One-to-many makes it much easier for our company to establish a fault-tolerant environment rather than using disk duplexing or Novell's [System Fault Tolerant] III NetWare," he said.

While "LANtegrity really works for us, its biggest disadvantage is that there is no connectivity" to a large direct-access storage device, Najafi said. That means someone must change tapes in an autoloader, and "that is a manual process they have to change in the future," he said.

Something for everyone

Another user contrasted the cost and scope of the two products. While "almost anyone could install the Vinca product," LANtegrity's one-to-many approach is "more sophisticated and takes a lot more understanding," said Victor Kokaram, chief technology officer at The Lande Group, Inc., a New York systems integration firm.

He added that while SnapShot Server is more cost-effective for smaller shops, LANtegrity proves effective for environments with 10 or more servers.

SnapShot Server will be available next month. It costs $999 if purchased as an add-on module to Standby Server installations. LANtegrity will ship at the end of this month. Pricing will range from $4,950 to $11,500, depending on the number of users protected on the network.

HP launches 'no-penalty' Unix upgrades

By Jean S. Bozman

Two bolts from the blue hit users of Hewlett-Packard Co. Unix workstations last week — an unexpected power boost for low-end and midrange PA-RISC 7100 units and a Unix-based Pentium server for Windows applications.

HP has doubled the memory-cache size to 1M byte in the midrange Model 715 and enhanced its 18-month-old entry-level Model 712 workstations with 100-MHz chips.

Keeping users supplied with memory and processing speed is one way to prevent conversions to other vendors' Unix systems, analysts said. "They are providing an upgrade path," said Tom Copeland, director of workstation research at International Data Corp. in Framingham, Mass.

There are also financial incentives. "These are no-penalty upgrades," Copeland explained. "You can get the new performance for the difference in price [between] the original systems and the new system." The vendor is giving users full value for the old machines; users must pay the difference in list price between the two machines.

Users said they did not expect the announcements, which came on the heels of HP's June 12 announcement of its J series workstation/technical servers, which use the PA-RISC 7200 chip.

HP last held a major workstation announcement based on PA-RISC 7100 chips in May 1994. HP recently said it will announce 7200-based workstations later this year.

Price check

Pricing for Hewlett-Packard's updated workstations and servers is as follows:

- **HP 9000 Model 712/100**
  $11,310 to $15,000
- **HP 9000 Model 715/100 XC**
  $21,000
- **HP 500 Windows application server**
  $16,500 to $24,995

Server surprise

Also last week, HP's Panacom division in Waterloo, Ontario, announced the HP 500 Pentium-based PC server for Unix workstation and X Window System users. The unusual crossover product combines Intel Corp. Pentium hardware, The Santa Cruz Operation's Unix-on-Intel operating system and Windows translation software from Locus Computing Corp. in Inglewood, Calif.

Analysts and users said they are eager to evaluate the HP 500. Dedicating a PC-based server to running Windows applications should be an efficient way to let Unix users see both Windows and Unix software on one screen. Many users complain that they must use both PCs and Unix machines to get through their workdays and that the multiple machines clutter work desks.

"I think it would be tremendously useful for a lot of people who need the ability to sit at their Unix desktop and be able to access Windows applications," said Fred Mallett, president of Fame Computer Education in Corpus Christi, Texas, who has 18 Model 715 workstations at his site. "You can grab PC applications and take data back and forth" between Unix and Windows.

Tony Iams, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y., said the HP 500 works by transmitting the Windows display across the Unix network and onto the user's X terminal screen. As such, it competes with Tektronix, Inc.'s WinDD software, which projects a native Windows NT 3.5 window onto an X terminal screen, analysts said.

Briefs

MathSoft adds Notes support

MathSoft, Inc. in Cambridge, Mass., has announced Mathcad 6.0 for Windows. This version adds Notes groupware and messaging and World-Wide Web capabilities to its existing mathematical and statistical features. In addition to Notes, it supports all popular LAN-based electronic-mail packages. "Conceptually, this is a tremendous advance in helping people work together and constitutes an example of a new paradigm we expect many personal productivity tools to take on," said Tom Austin, research director at Gartner Group, Inc. in Stamford, Conn.

Mobile sales package debuts

Brock Control Systems, Inc. in Atlanta recently unveiled its TakeControl 3.0 sales software at Mobile World in Dallas. The product, which targets sales, marketing and customer support, has been upgraded to support Microsoft Corp.'s Windows 95, Windows BackOffice and Windows NT. TakeControl provides data synchronization, word processing and faxing capabilities, account management, inbound and outbound calling and scripting. Installing a 20-user system costs about $50,000.

SCO names CEO

The Santa Cruz Operation (SCO) in Santa Cruz, Calif., recently named Alok Mohan as chief executive officer, effective July 1. Mohan replaces Lars Turndal, 59, who has held the job since January 1993 and will retire on July 1. Mohan, 47, joined the company as chief financial officer last May. He was named president and chief operating officer last December. Mohan came to SCO from AT&T Global Information Solutions in Dayton, Ohio, where he was vice president of strategic planning and controller. SCO has no plans to fill the COO position.

Horizons unveils cost analysis tool

Horizons Technology, Inc. in San Diego recently introduced LANrecord 1.0, a software cost analysis tool that supports software metering, usage monitoring and chargeback for stand-alone applications and suites. LANrecord is available bundled with Horizon's LANauditor 3.04 auditing and inventory software at an introductory price of $795 through Aug. 31.

DataBeam Corp. has introduced FarSite 2.0, a multipoint document application.

According to the Lexington, Ky., company, FarSite 2.0 is a Windows-based application that helps two or more users in different locations work together. As users talk to one another by telephone, they can draw, enter text and make changes to spreadsheets, documents and images.

FarSite 2.0 supports multipoint conferences in any combination of network configurations, including LANs, modems and third-party bridges.

FarSite 2.0 is available in two versions. The Corporate Edition costs $199 and supports conferences through any combination of point-to-point dial-up links, LAN and WAN connections. The Standard Edition costs $99 and lets users participate in conferences only through Public Switched Telephone Network and Integrated Services Digital Network dial-up communications.

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(606) 245-3500

Locus Computing Corp. recently announced Merge 3.2 for The Santa Cruz Operation's SCO OpenServer 5.

According to the Inglewood, Calif., company, Merge 3.2 allows DOS or Windows applications to run on an Intel Corp. 80386, I486 or Pentium-based Unix system. It lets Unix users concurrently access multiple Unix, DOS and Windows processes on a single system. It was designed to combine the multitasking power of Unix with the versatility of DOS and Windows applications.

Pricing for Merge 3.2 starts at $395 for a single-user license.

▶ *Locus Computing*
(310) 670-6500

Lightspeed Software, Inc. has introduced MailSync, a software mail gateway to link Banyan Systems, Inc.'s Vines and Microsoft Corp.'s Mail platforms.

MailSync runs as an application on top of Vines. According to the Bakersfield, Calif., company, it gives businesses the ability to synchronize directories and lets users on Banyan's Intelligent Messaging mail backbone system exchange electronic mail with Mail users. The exchange between the mail environments is accomplished through Lightspeed's Message Transfer Agent.

MailSync requires an additional intermediate formats, services or gateways.

Pricing for MailSync starts at $1,500 and is based on the number of directories and post offices.

▶ *Lightspeed Software*
(805) 324-4291

Sicomm Soft has introduced C. T. Vox, a voice server for accessing Notes.

According to the Metz, France, company, C. T. Vox gives users Touch-Tone telephone access to Notes databases stored on The Santa Cruz Operation's SCO Unix 3.0 server. Users can access information, manage databases and leave responses.

Pricing for the C. T. Vox four-line server starts at $12,000.

▶ *Sicomm Soft*
(33) 87 37 2021

Unison Software, Inc. has announced Maestro 4.4, workload scheduling software.

According to the Sunnyvale, Calif., company, Maestro 4.4 allows users to set up workload schedules that can be applied to user-defined groups of Unix systems.

It also provides network security by checking the IP addresses of remote workstations before communicating with them.

Pricing for Maestro 4.4 starts at $14,000.

▶ *Unison Software*
(408) 245-3000

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INTERNET SECURITY PRODUCTS USHERED IN, 56
NEW PRODUCTS, 60

Enterprise Networking

Job 'net' working

Time, distance restraints eliminated from IS recruiting

By Julia King

Having exhausted local supplies of highly skilled information systems professionals, several large companies are casting a wider recruitment net by advertising for and interviewing potential job candidates in cyberspace.

Since January, NEC Electronics, Inc., Unisys Corp. and LSI Logic Corp. have all hosted so-Internet-based "CyberFairs" organized by Heart Advertising Network, an advertising and recruitment firm in Los Altos, Calif.

On July 12 and 13, Fidelity Investments in Boston will tap into that network in search of professionals with C++, Sybase and Unix skills, among others.

"You can only fish the same pond for so long, and we feel we may have tapped out the local market for these positions," said Betty Ann Abbott, a senior staffing specialist at Fidelity.

Heart charges employers $5,000 to run a two-day on-line job fair, a price that is downright cheap compared with newspaper ads, which can cost as much as $1,500 per ad per day.

"We're facing tremendous challenges in staffing. If we hired even one person for some of these extremely difficult-to-fill technical positions, it would be well worth it," Abbott said.

Getting connected

CyberFairs work like this: The date and time of the fair, along with detailed job descriptions, are advertised in advance by the employer and by Heart. Hiring firms take out newspaper ads while Heart makes the information available to applicants on-line via Telnet and modem connections and on its World-Wide Web page.

On the day of the fair, applicants log on and complete a prequalifying questionnaire before participating in a private on-line interview, during which candidates, recruiters and managers exchange typed messages on-line.

Typically, Heart, whose proprietary PC-based software supports the entire process, allocates 16 ports per fair, four for recruiters and 12 for job candidates.

"Anyone who logs on to a CyberFair will get a welcome page and also the ability to log on to Heart's Web page, which has a calendar of [other upcoming] CyberFairs," said Sandhya Dave, president of Heart Advertising Network.

Earlier this year, about 250 to 300 people dialed into Unisys' on-line job fair, said Carol Langer, a Unisys technical recruiter in San Jose, Calif.

The company followed up with two of the interviewees, but ultimately, neither one was hired for reasons that had nothing to do with CyberFair, Langer said. Still, Langer said she considers the fair a great success.

"We're looking for people with a very strong Unix background, but everybody else in the world is looking for the same thing. So if we get one interview, we're thinking that's success," Langer said.

Other recruiters are dubious about on-line wooing. "I prefer to meet people in person or talk with them on the phone," said Violet L. O'Brien, vice president of Whitaker Information Technology Services, an IS recruitment firm in Houston. But O'Brien said she has tapped the Internet to download resumes from various network-based bulletin boards.

◀ **Heart Advertising Network's** *Cyber-Fairs are Internet-based job fairs. The company charges employers $5,000 to conduct two-day virtual on-line job searches and interviews.*

Sync enhances FrameNode 400

By Laura DiDio

Sync Research, Inc. recently announced a new version of software for its FrameNode 400 frame-relay access devices (FRAD) that allows businesses to integrate IBM SNA traffic and legacy LAN data without adding overhead to the network.

Release 3.0 of the FrameNode 400 FRADs helps corporations "cut their recurring leased-line costs by 20% to 30%, depending on their network configuration," said Eric Hindin, senior network consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.

New and improved

Due out in July, Release 3.0 includes a number of other enhancements such as automatic switched connection and Virtual Route Selection capabilities, according to John Rademaker, president of Irvine, Calif.-based Sync Research.

The Virtual Route Selection facility, for instance, lets network administrators assign different levels of frame-relay connections — including primary and secondary or virtual and alternate — for each device attached to the network. This lets users integrate SNA traffic without broadcast overhead.

The connection switching capability, meanwhile, automatically switches connections from failed links or networks to an alternate or backup network connection without disrupting the network's operation or individual user sessions, Rademaker said.

Release 3.0 of the FrameNode 400 software can specify traffic prioritization by device. This is particularly important, Hindin said, because users often have several disparate types of SNA traffic within their organizations.

Release 3.0 will be available as an optional package. Prices range from $1,500 to $3,500, depending on the configuration, according to the company.

Middleware spurs growth in wireless data market

By Mindy Blodgett

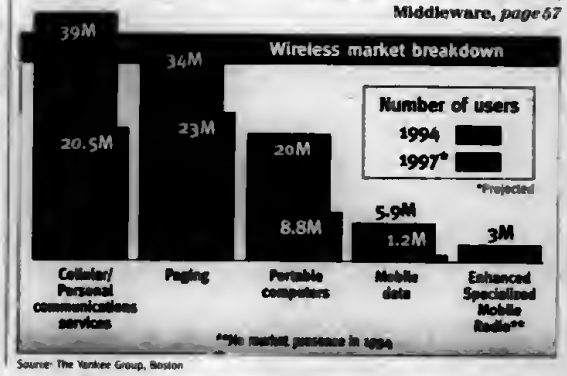
On the long, bumpy drive toward wireless solutions, the emerging wireless middleware category is becoming a steamroller due to its ability to provide transparent connections for mobile users.

Middleware, or software that integrates incompatible networks, masks the proprietary protocols of wireless data networks such as RAM Mobile Data, Advanced Radio Data Information Services and Cellular Digital Packet Data.

Typically, middleware makers offer users an application programming interface (API) that lets them hook their applications into different wireless and wired networks. Dan Merriman, an analyst at BIS Strategic Decisions in Norwell, Mass., said hooking into a single API makes it easier for a company that has field service technicians to support all the networks.

As wireless middleware matures, observers say it is moving in different directions. For instance,

Middleware, *page 57*



Source: The Yankee Group, Boston

http:

If you are satisfied with the tools shipped with your commercial Internet software, read no further. But if you want to try some of the best clients going, check out Forrest H. Stroud's Consummate Winsock Applications List (http://homepage.smart.net/~rwilloug/stroud/cwsa.html). The site provides capsule descriptions, prices, ratings with 1 to 5 stars and hot links to the software developers. This is where we found our new favorite Usenet newsreader client, Agent from Forte Software in Carlsbad, Calif.

We have yet to download a client application that has not worked perfectly with our TCP/IP stack.

Stroud's critical Winsock utilities

Trumpet Winsock Version 2.0b
A must-have client for Windows 3.x SLIP/PPP users
Size: 175K bytes
Status: Shareware – $20
Author: Peter Tattam of Trumpet Software International
Address: ftp://ftp.trumpet.com.au

Net Dial Version 2.5
Automatic dialer for Winsock
Size: 625K bytes
Status: Shareware – $20
Author: James Sanders
Address: http://www.enterprise.net/netdial/

WSTBar Version 2.3
Internet applications manager and quick launch tool bar
Size: 97K bytes
Status: Shareware – $10
Author: Joel A. Gerber
Address: http://www.computek.net:80/physics/

WS-Timer
Monitors the time users spend on-line
Size: 181K bytes
Status: Freeware for noncommercial use
Author: Louis Aube
Note: Requires VBRUN300.dll (224K bytes)
Address: ftp://ftp.sentex.net/pub/incoming/wstimr312.bit

WebWatch 16- or 32-bit, Version 1.0a
Lets users track changes in selected Web documents
Size: 16 bit (90K bytes); 32 bit (129K bytes)
Status: Shareware – $18; free 30-day evaluation
Author: Joseph Janus of Specter, Inc.
Address: http://www.specter.com/users/janos/specter/webwatch.html

THE INNER PAGE

Best of browser breed bows

By Paul Gillin

Browser software — the stuff you use to look at graphical pages on the World-Wide Web — is all pretty much the same. But a new breed of commercial packages that begin shipping this week may knock trusty Mosaic and Netscape off of a lot of users' PCs.

The disclaimer: I've only seen demonstrations of beta-test versions of these products by skilled users. That does not give much sense of ease of use. But you will be able to download versions of these products for free, so you can see for yourself.

At the top of my summer wish list is The Wollongong Group, Inc.'s Emissary, an object-oriented package that seamlessly integrates a Web browser, electronic mail, File Transfer Protocol (FTP), Telnet terminal emulation and various file and graphics viewers.

Highlights include the following:

- Emissary manages all files and drives on your PC, network and the Internet as local files. Navigating the maze of home pages and FTP directories is as easy as trolling through your local hard disk.
- It has drag-and-drop everything. Drag a Uniform Resource Locator (URL) address to a folder and it becomes a bookmark. Drag it to an E-mail message and it becomes a hot link within the mail message — assuming the recipient also has an Emissary mail reader. Emissary will even scan all kinds of documents and E-mail as well as automatically convert anything that looks like a URL into a hot link.
- The applications integration enabled by the object-based design means you all but forget whether you are in mail, FTP, Telnet or on the Web.
- Built-in viewers allow you to decode all kinds of graphic or compressed files — even those using the ponderous uuencoding technique — with a single mouse click.

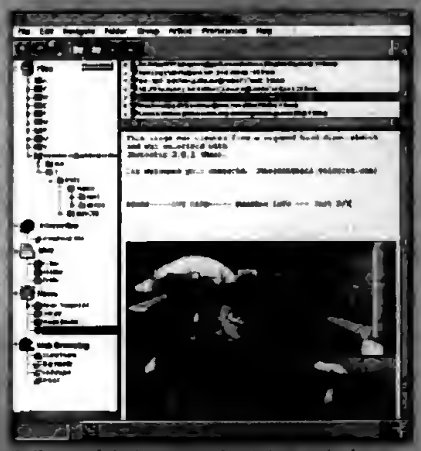
Emissary's main drawback may be ease of use. There is so much in the product that users may have trouble keeping it all straight. It is also not clear how much Emissary will cost. The Palo Alto, Calif.-based Wollongong is toying with low-end pricing of $99 when the product ships in July. You can download a beta version from Wollongong at http://www.twg.com.

Quarterdeck Corp.'s Mosaic, which shipped early this month, is less ambitious than Emissary, but it looks like a great value at less than $30 for a Web browser, Gopher, FTP, newsreader and mailer.

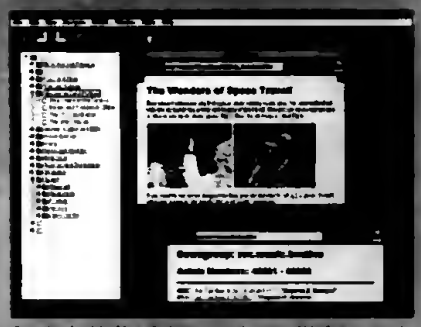
Quarterdeck Mosaic displays and updates multiple Web windows simultaneously, depending on the capabilities of your Internet access provider. The hot list features are especially impressive. They give you the ability to maintain multiple hot lists in customizable folders and drag and drop URLs between the folders.

A viewer that shows the hot links underneath a Web page cuts down on aimless wandering. True pack rats can even set up the software to list every site they have visited, just in case they want return to the "Shoot Barney" page (http://ugweb.cs.ualberta.ca/gerald/barney). Download the beta version of the product from Quarterdeck's home page at http://www.qdeck.com.

New packages integrate Telnet, FTP and E-mail



Wollongong's Emissary seamlessly integrates browser, reader, file and mail functions



Quarterdeck's Mosaic lets you view multiple pages at once and create drag-and-drop bookmark lists

Companies usher in Internet security products

By Gary H. Anthes

Responding to growing demands for Internet-based communication and commerce, Sterling Software, Inc. and Morning Star Technologies, Inc. recently announced products aimed at ensuring safe connections to the Internet.

Dallas-based Sterling introduced Connect:Firewall software and services for Internet gateway security and administration. Like other firewalls, it offers access control and intrusion detection, but it also includes tools for electronic-mail administration, configuration validation and name server administration, Sterling officials said.

Sterling's $18,900 product comes with a five-day training session and 24-hour customer support, the company said.

"If you are going to connect to the Internet, you need a firewall," advised John Pescatore, an analyst at IDC Government in Falls Church, Va.

"The only thing worse than no firewall is a firewall that can't be administered, adapted and upgraded. And if you don't have a defined policy on Internet access, a firewall will be an expensive facade," he warned.

Flexible security

Morning Star in Columbus, Ohio, introduced SecureConnect, hardware and software for data packet filtering, user authentication, encryption and network monitoring. The company said Internet access provider Performance Systems International, Inc. will use SecureConnect as part of its secure internet service

Morning Star said the firewall product offers more flexible security than routers that perform static packet filtering. SecureConnect can dynamically and selectively open ports to connection from the Internet, depending on the needs of authenticated internal users.

Justin Randall, a systems analyst at Limited Credit Services, Inc. in Columbus, Ohio, said the company uses the product to safely connect to the Internet for communication with vendors. As a result, Limited Credit Services hopes to reduce its air freight, overnight delivery and long-distance telephone costs, he said.

Randall said SecureConnect allows only electronic mail into the company but gives internal users free reign "as if the firewall is not there." Although it blocks incoming traffic by default, it will automatically open up to allow traffic that an internal user requests. "It will say, 'OK, I'll open up this port for this particular session between these two hosts,'" he said.

A complete SecureConnect solution consists of router hardware and software priced between $1,995 and $3,995, depending on the number of network connections supported, and authentication server software priced at $1,500 for 50 users.

Middleware

CONTINUED FROM PAGE 55

some types of middleware use software agents, which Merriman said maximizes the reliability and efficiency of the wireless link. For instance, a user may simply hit the send button for a message, and the agent will handle compression, encryption and other issues.

The agent might also perform such functions as breaking a file into different pieces in order to send it over a network that normally cannot handle a large file. Or it might deliver software upgrades to 1,000 users in the field automatically.

Intended audience

Industry observers say the primary target market for middleware includes network providers who fold the products into the infrastructure, end users who develop custom applications and application developers who integrate the products for resale.

Analysts said features such as agents make it easier for corporations to use middleware.

"With middleware, you don't have to be a wireless or mobile expert to implement a mobile solution. [The vendors] take care of it for you," said Mark Lowenstein, an analyst at The Yankee Group in Boston.

David Wortley, automation director at GTE Services, a division of GTE Corp. in Stamford, Conn., said that by using XcelleNet, Inc.'s RemoteWare 2.0, 200 field service technicians are seamlessly linked through their IBM ThinkPads to the corporate infrastructure.

GTE has been developing the application since in February, but integrating RemoteWare into the back end and linking it to the database took just one afternoon. The cost of the application is about $5,000 per user, including the IBM devices and printers.

The technicians, who repair government communications equipment, are now able to easily send and receive repair information via the cellular network, Wortley said.

"We used to page them, and then they would have to find a phone and call in," Wortley said. "Some of these guys cover half a state in really remote places like Idaho so you can imagine the problem. And with the computers, they can see all the information they need, like the history of the calls, rather than just getting only basic repair information."

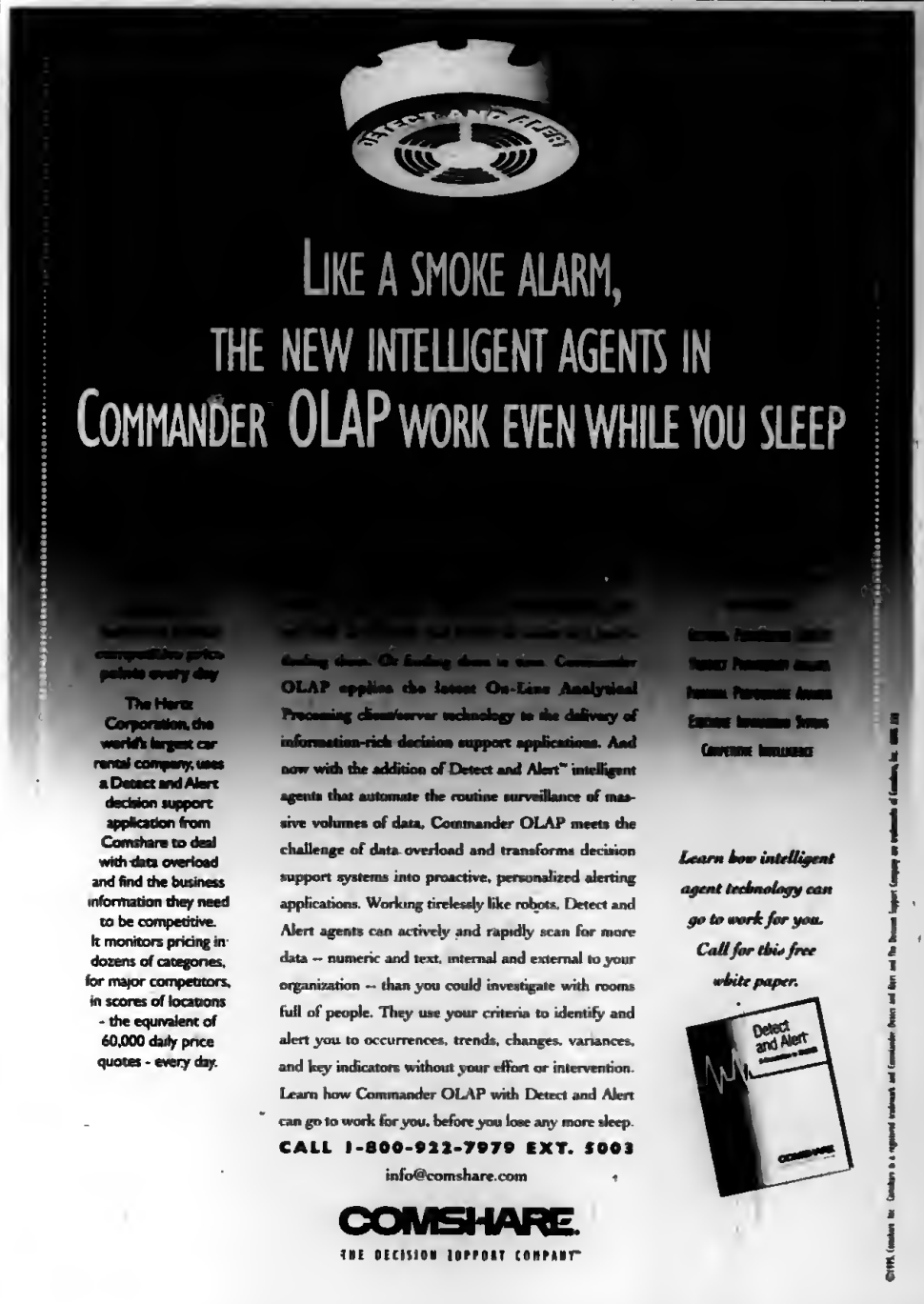
As helpful as middleware looks to be, some of the products face an uncertain future. Many of the functions available in middleware will be folded into operating systems such as Microsoft Corp.'s Windows 95 and networking products, industry observers said.

Middleware makers "will have to add value to their products to stay viable," said Samuel May, an analyst at The Yankee Group. "But in the middle term, middleware is one of the most important factors driving wireless solutions and software development for remote use."

Brief

Tandem adds SNMP

Tandem Computers, Inc. in Cupertino, Calif., said it will port San Jose, Calif.-based Peer Networks' Subagent Toolkit to its NonStop Himalaya servers starting this month. Priced at $14,625, the Subagent Toolkit will make Tandem machines open to Simple Network Management Protocol platforms, including Hewlett-Packard Co.'s OpenView.



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Frye Computer Systems, Inc. has announced the Frye Network Management Platform — LAN Directory 1.0 for Windows (WinLAND)

According to the Boston company, WinLAND lets network managers inventory more than 300 hardware items, identify software on each PC workstation and expand a user-definable software master list of more than 6,000 files. It also lets managers customize the collected information for tracking purposes.

WinLAND supports Microsoft Corp.'s Windows and Windows NT desktop operating systems. It also supports several network operating systems, including Windows NT, Windows for Workgroups, Novell, Inc.'s NetWare and Banyan Systems, Inc.'s Vines.

An initial WinLAND 1.0 license, supporting up to 50 computers, costs $595. Additional licenses, supporting up to 100 computers, cost $495.

▶ *Frye Computer Systems*
(617) 451-5400

Cylink Corp. has introduced the AirLink E1 radio for wireless domestic point-to-point wide-area network links and international WANs.

According to the Sunnyvale, Calif., company, the AirLink E1 radio links private branch exchanges, KTSs, multiplexers, bridges and routers at megabit speeds and at a range of up to 20 miles. It has user interface software for terminal or modem interfaces that lets administrators manage and monitor the radio from a desktop or laptop PC at either end of the link or remotely via a dial-up modem from a management facility.

Pricing for the AirLink E1 starts at $20,000 per link.

▶ *Cylink*
(408) 735-5800

Cybex Corp. has introduced AutoBoot 4XP, a monitor/keyboard/mouse switch.

According to the Huntsville, Ala., company, AutoBoot 4XP lets up to four users simultaneously control any combination of up to 144 PCs, Macintoshes or Sun Microsystems, Inc. workstations from a single location. It was designed to help centralize network servers and consolidate computers for hardware and software testing.

AutoBoot 4XP supports a range of monitor types (VGA, SVGA, XGA) and accommodates computers with different video types.

Pricing for AutoBoot 4XP starts at $795.

▶ *Cybex*
(205) 430-4000

Advanced Computer Communications, Inc. has introduced the Yukon IP TeleCommuter, a LAN/WAN connectivity product.

According to the Cupertino, Calif., company, the Yukon IP TeleCommuter was designed to give remote sites and home offices dial-up Integrated Services Digital Network connectivity. It supports bridging and routing protocols and includes Bandwidth Optimization technology. It also features a single, autosensing Ethernet connector that allows connectivity to a 10Base-T network through an RJ-45 connector or to a 10Base-5 network through an attachment unit interface connector.

The Yukon IP TeleCommuter is available in two packages: one for users interested in Internet access and one for small offices with Novell, Inc. NetWare networks. Single-unit pricing for the Yukon IP TeleCommuter starts at $1,295.

▶ *Advanced Computer Communications*
(408) 366-9600

Standard Microsystems Corp. has introduced TigerStack, segmentable and stackable hubs for use in conjunction with LAN switching.

According to the Hauppauge, N.Y., company, TigerStack can be used for stand-alone workgroups with six to 28 users and servers. It can be scaled up to 32 network segments and offers 320M bit/sec. bandwidth, with support for up to 224 users.

TigerStack requires one Network Management Module that can be placed anywhere in the stack and added during or after the initial installation.

Pricing for TigerStack starts at $599.

▶ *Standard Microsystems*
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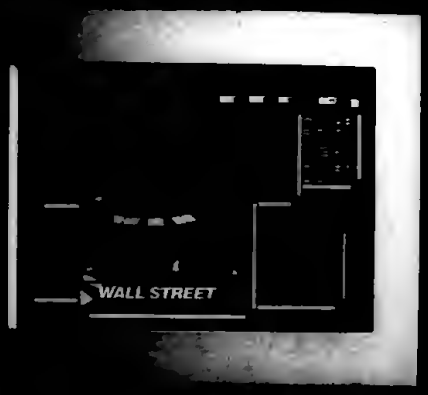
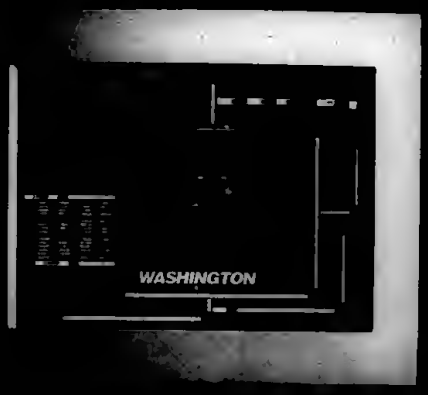
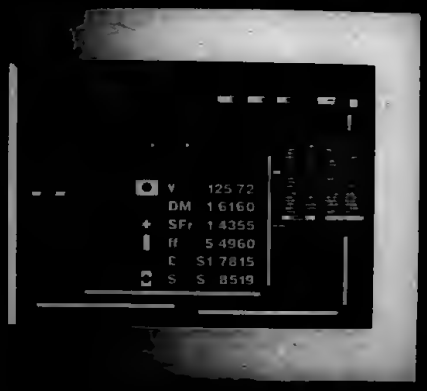


HOW WALL STREET'S SMARTEST BROKERS MAKE SURE THEIR INVESTMENTS NEVER GO DOWN





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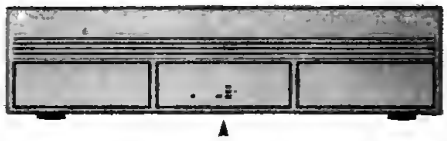

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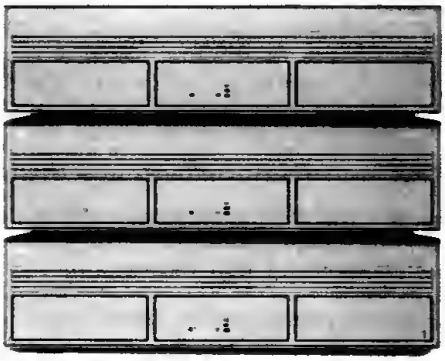

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Sears mines data with multidimensional tools

By Rosemary Cafasso

Sears, Roebuck and Co. is betting on multidimensional technology from Arbor Software Corp. to provide the tools it needs to leverage reams of information tucked away throughout the giant retail chain.

The plan calls for Sears financial analysts, along with store and merchandise managers, to use Arbor's Essbase — a multidimensional database engine with a spreadsheet-like front end — for retail planning, forecasting and analysis.

Based on some end-user accounts, the Essbase technology is already making life easier. Karl Stephan, a senior financial manager in the planning analysis sector, said analyzing inventories across Sears' merchandise segments used to be a monster task.

"I would have to take the numbers for each [segment] and somehow get them onto one spreadsheet," Stephan said. "It would take many hours. With Essbase, you can do that with the click of a couple buttons and it's done."

Essbase is now replacing 12 data query and analysis systems used by Sears managers. The current mix of host-based and desktop software is difficult to use, and three of the systems alone are costing Sears about $1 million in license fees and support costs.

While Sears did not reveal the value of the Arbor contract, the retailer has made Essbase a corporate standard and expects that upward of 3,000 employees will eventually use it, said Steve Beitler, national manager of operational planning and information.

Multidimensional technology has been gaining momentum as an alternative to traditional relational systems (see box).

Sears has "become more and more imaginative [with technology] and more focused on what their users want," said Seth Kranz, a management consultant at Computer Sciences Corp. in Waltham, Mass.

Beitler said the retailer selected Arbor last year after it evaluated 15 software providers, including all the big names in multidimensional technology. Sears put the competitors through a rigorous test that simulated 100 concurrent users. Arbor won in terms of "backup, recovery and ease of use," Beitler said.

The bottom line, he added, is that users can do more with data than before. "You can slice and dice [the data] any way you want," Beitler said. "It would seem the logical step beyond spreadsheets."

In fact, analysts said a key reason why Arbor is winning accounts such as Sears is because it designed its front end to resemble spreadsheets, one of the most commonly used desktop analysis tools.

"I think it's about where the user started from," said Donald DePalma, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "If they started with spreadsheet analysis, then they would likely go with Essbase."

On the other hand, users with more of a data management focus would likely zero in on Arbor competitors such as IRI Software or Pilot Software, Inc., DePalma added.

Quick queries
Multidimensional systems are typically optimized for very fast queries by storing data in layers that build on one another. Top layers contain summary data of the data that exists in layers below it. When a query is launched, it retrieves a precalculated summary, which makes it that much faster.

Source: International Data Corp., Framingham, Mass.

Disk demand surges

Mainframe users are booting out older technology

By Craig Stedman

Mainframe shops are moving with increasing urgency to send aging, failure-prone and costly disk subsystems such as the 3380 and 3390-2 into peaceful retirement.

As a result, shipments of mainframe arrays are surging beyond forecasts and should yield the first increase in annual disk spending since 1990, according to International Data Corp. (IDC) in Framingham, Mass. (see charts).

"We wanted to get away from the old stuff as fast as we could," said Thomas Loane, vice president of computers and communications services at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. In April, Alamo wrapped up a year-long project to rid itself of old 3390s and put its full terabyte of mainframe data on less expensive and more powerful RAID arrays.

By doing so, Alamo chopped its lease cost in half from about $41,000 per month for 180G bytes of capacity to roughly $21,000 per month, Loane said. Power and maintenance costs are also lower, and data availability is better because of the redundancy provided by RAID Level 5 technology, he added.

With other users telling similar tales of leaving the past behind, IDC last week increased its projection of 1995 mainframe disk shipments from 1,250T bytes to nearly 1,350T bytes. That would be a whopping 46% increase over the 1994 capacity and would far exceed growth rates from previous years.

Meta Group, Inc., a consultancy in Stamford, Conn., said it also expects shipments to reach the 1,300T-byte level this year, up from an initial estimate of 1,200T bytes. IDC and Meta Group cited several reasons for the surge in demand, including pricing declines and the continuing rebound in mainframe shipments that started early last year.

Older but not better

But a big contributor to the buying binge is the desire to get away from older disks, especially the 8-year-old 3380K and the 6-year-old 3390-2 sold by IBM and plug-compatible vendors. "People are saying they don't trust those anymore, and they're right not to," said Carl Greiner, an analyst at Meta Group.

Barnett Banks, Inc. in Jacksonville, Fla., began seeing "an abnormally large number of problems" with its 3390-2 subsystems about 18 months ago, said Michael Puldy, manager of resource management at the bank's information systems unit. At one point, 12 drives failed in a 45-day period, he said.

Already this year, Barnett replaced about 500G bytes of 3390-2 disks with IBM's Ramac RAID array, and it plans to get rid of the same amount of 3390-3 capacity next year, Puldy said. That should enable the bank to slash its annual lease cost by $500,000, he added.

Kaiser Permanente Health Plan, Inc.'s Northern California office dumped the last of its 3380s in April and expects to replace more than 650G bytes of 3390-2 disks in the next year or so, according to Al Alioto, manager of resource management at the Walnut Creek, Calif. company.

"I'd like to replace them sooner because of the higher probability of failures" compared with RAID or even 3390-3 technology, "but it's a major cost" because Kaiser buys its mainframe storage outright rather than leasing, he said.

David Vellante, an analyst at IDC, said in a report issued last week that mainframe shops typically get rid of 25% to 30% of their installed disks annually. But IDC's research "indicates that many customers are replacing 35% to 40%" this year, he added.

IS a hit with baseball clubs

By Julie Bort

Baseball was slow to embrace technology, but like a rookie player eager to impress, it is quickly coming up to speed.

Among baseball's more unusual information systems dilemmas is the industry's confederation-like business model. Each club operates as a separate, autocratic business, and a central organization, Major League Baseball, represents the clubs as a whole. This is the inverse of a typical corporate model with a headquarters, branch offices and subsidiaries.

The problem of implementing a single IS solution throughout all clubs became evident in 1988 when Major League Baseball pitched the idea of maintaining its own statistics database. At the time, this function was outsourced to a sports statistics company.

"We've got 28 businesses out there, and we had 28 sales jobs to con-

Baseball, page 69

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Bull takes Unix by the horns

Madison project to produce mainframe-like superserver

By Neal Weinberg

Bull Worldwide Information Systems, Inc. is developing a mainframe-like Unix superserver for release in 1997 as part of a larger strategy to keep its installed base happy while the company expands into new markets.

The Madison project is expected to produce a Unix server with batch processing capability and the power to serve thousands of users simultaneously — traits usually associated only with proprietary mainframes. Users will be able to mix and match applications on Bull's current GCOS mainframes and the new Unix servers.

Mike Kahn, chief executive officer of Clipper Group, Inc. in Wellesley, Mass., said the Madison project is Bull's way of reassuring customers by taking the heavy-duty capability of the GCOS mainframe operating system and making it available on IBM's AIX Unix operating system. Bull and IBM developed high-end Unix

Raging Bull

[redacted]	Mainframe-class Unix server
Code name:	Madison
[redacted]	PowerPC
Operating system:	AIX
[redacted]	1997

servers built on identical hardware and running IBM's AIX Unix system.

Bull's chances of interesting noncustomers depend on how well it addresses issues such as system security and network management, Kahn added.

But many Bull users are not waiting until 1997 to stroll down Madison avenue. They are stampeding to Unix, buying Bull's Unix Escala servers and machines from other vendors.

Harold Flueckiger, a senior programmer at Auburn Gear, Inc. in Auburn, Ind., said he is picking out new software to run the company's manufacturing and accounting applications. When that process is completed, he will move off the Bull mainframe and onto Unix.

Bull's Escala is in the running, as are systems from other Unix vendors. But Flueckiger will not wait until 1997. He plans to have the Unix platform up and running by early 1996.

Other users have decided that Unix is the way to go. The only questions are when and how.

Ed Vasko, a programmer at Art Iron, Inc. in Toledo, Ohio, said the useful life of his Bull mainframe is just about up. He has been investigating Escala, he added, although he has not made any purchase decisions.

Louis McCurry, a systems administrator at longtime Bull shop the Alabama Department of Education in Montgomery, said he is moving quickly to "get out of the proprietary operating system environment totally." His vision is to have Unix machines in his shop accessing information from the state's central data center, and he said he plans to look at Bull's offering.

European outsourcing rises

Users seek help with complex systems

By Marc Ferranti

The complexity of managing distributed systems and the current trend to re-engineer companies around their core businesses will expand the European market for outsourcing services for at least another five years, industry insiders say.

As fierce competition squeezes margins for both hardware and software, vendors are seeking to offer services that involve asset management, training, installation, help desks and systems integration — the "hidden costs" of information systems that remain high for users no matter how low the prices of the products.

Help welcomed

And users — caught up trying to control a sprawling mix of technology found in client/server systems — often welcome the help.

"We decided to outsource the development and installation of our new system so we could focus on our core competencies and main business," said Hilbrand Nawjin, director of the Dutch Immigration and Naturalization service. The agency handles appeals for asylum, applications for residency and border control.

"Asylum requests increased 10 times in 10 years to the point of making 200,000 decisions a year, while personnel increased from 370 to 1,400," Nawjin said. "This caused us to re-engineer the way we were using [information technology], and we became convinced we needed a national network between offices, standard desktop configuration and an interoffice workflow system."

The immigration service outsourced the development of the systems to the Dutch RCC State Computer Center, which is now just partially state-owned.

RCC designed and maintains the immigration service's branch LANs linked to a WAN. It turned to Ing. C. Olivetti & Co. to develop a workflow management system based on FileNet Corp.'s WorkFlo software and a document management system using WordPerfect, a product from WordPerfect, the Novell, Inc. Applications Group.

"The electronic exchange of information has reduced the cost associated with each residency application request," Nawjin said.

The most sophisticated contracts between users and vendors often cover issues concerning both product sales and services, according to Roger Fulton, an industry analyst at Dataquest, Inc. in the UK. "They may cover not only sales of hardware but installation and management of upgrades as well as financing arrangements and training — things that will help tie a user to a vendor," he said.

Vendors are increasingly touting services to differentiate themselves in markets such as the desktop PC arena where products are considered commodities. In Europe, money-losing IS companies such as Olivetti and Siemens Nixdorf Informationssysteme AG are joining U.S. counterparts such as IBM in boosting efforts to market their services and compete with traditional service companies such as systems integrator Electronic Data Systems Corp.

Steady growth

In Europe, the market for all outsourced services, including systems management, installation, development and security services, was $4 billion last year, according to Dataquest. The market will grow steadily at 16% per year during the next five years, the company said. In the desktop arena, the market should grow much faster, at an average 30% rate for about 10 years, according to Dataquest.

Complexities abound

On the customer side, the increased complexity of distributed systems linking PCs, minis and mainframes, combined with the blistering pace of product upgrades, has made managing IS more complex than ever.

"I've had a number of vendors come to me, and they seem to be getting very aggressive on pricing," said Rene Carayol, systems director at IPC Magazines in the UK.

When he was IS director at Pizza Hut UK last year, Carayol said he used Olivetti as a services provider. At IPC, he fields offers from various vendors, including Siemens. "Competition is a good way to get complacent vendors into shape," he said. "I've heard prices that are much lower this year" than last.

Ferranti writes for IDG News Service's Paris bureau.

[redacted]

Storage Technology Corp. has announced a channel extension for its Iceberg 9200 Virtual Storage Facility.

According to the Louisville, Colo., company, the channel extension lets customers read and write data between two sites anywhere in the world.

The channel extension for the Iceberg 9200 was designed to improve recovery plans through high-availability direct-access storage devices and to help consolidate data centers.

Pricing for the channel extension depends on configuration and starts at $80,000.

▶ *StorageTek*
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The VM Software Division of **Sterling Software, Inc.** has released VM:Migrate 1.0, a systems management product for IBM's VM/ESA operating system.

According to the Reston, Va., division, VM:Migrate helps reduce storage costs and backup time by automatically migrating unused and infrequently used files from primary storage devices to secondary, less costly storage media in a compressed state. VM:Migrate exploits VM's hierarchical Shared File System to provide a system-managed storage environment.

Pricing for VM:Migrate is based on CPU model groups and starts at $27,400.

▶ *Sterling Software*
(703) 264-8000

Network Systems Corp. has introduced a remote device interface that eliminates the 60-kilometer distance limit for connecting mainframes and peripherals through IBM's Escon interconnect.

According to the Minneapolis company, the remote option will support unlimited distances and will work across multiple types of media rather than the fiber-optic cable Escon typically requires.

The interface costs $20,000.

▶ *Network Systems*
(612) 424-4888

BMC Software, Inc. has introduced Application Restart Control (AR/CTL) for VSAM.

The Houston company said AR/CTL for VSAM automates and shortens application restart times and ensures data integrity for VSAM customers. The product works with BMC Software's other AR/CTL products to provide automated restart capabilities for customers using IBM's DB2 and IMS. It also improves data availability by allowing a batch job to share VSAM data with IBM's CICS.

AR/CTL for VSAM includes features for VSAM file sharing, automatic checkpoint selection, application checkpoint frequency and application failure recognition. Pricing for AR/CTL for VSAM starts at $6,500.

▶ *BMC Software*
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Baseball

CONTINUED FROM PAGE 65

vince them that it was in their best financial interest to computerize and control their own statistics," said Jim Small, a spokesman for Major League Baseball in New York.

Once all parties agreed to it, the Baseball Information System (BIS) was created. Based on two IBM AS/400s — one operating as a redundant system — BIS uses a custom-made database application.

Each club has a dedicated IBM PS/2 linked by a 56K bit/sec. leased line from MCI Communications Corp. After every game, each club fills out various electronic forms and nploads them. The AS/400 processes the forms overnight, and then the clubs can access the statistics to generate np to 500 reports.

Today, BIS has also become an additional source of revenue for the clubs. For instance, through an agreement with Microsoft Corp., users of Microsoft Baseball — an application for statistics aficionados — can log on to BIS and download statistics on the game. Major League Baseball also plans to launch a fee-based fax-on-demand system this season.

Increasing demands

in the trenches, npper management has only recently discovered the strategic value of IS. As a result, baseball's IS managers are being asked to handle an increasing number of projects with few resources.

Take the Colorado Rockies, for instance. Its systems are recognized as among baseball's most advanced because it is a relatively new club — 3 years old — and is moving into a new stadium, Coors Field, in March. It boasts an Ethernet network on a fiber backbone with about a hundred 486 nodes.

Yet it employs an IS staff of only three to support more than 150 people. End users are in administration, ticket sales, one of five merchandise stores or a warehouse/catalog location. The Rockies' IS group is also responsible for the private branch exchange and voice-mail system, said Mary Burns, director of IS for the Colorado Rockies in Denver.

"My biggest IS challenge is providing service to everyone in a timely manner. Everyone wants everything immediately," she said. "I solve this by using a triage method."

The key to successful triage is making sure that IS is the funnel for all computing technology in the organization. "The IS department has to load every application and be involved in every new system — even screen savers," she said.

Wireless support

Another issue is supporting on-the-road scouts, who use laptops and software to generate data that is a club's most guarded secret.

Scott Proefrock, player development and scouting assistant for the Atlanta Braves, said the scouts in his club have laptop computers in the field, and they upload scouting information via analog modems.

"When the information comes to the database, we have a map set up," Proefrock said. "That data will then be routed to the regional and national [scouting] supervisor, so they can see the report and exchange information."

Data gathered in the field from scouting applications is then dumped into a relational database or spreadsheet where it can be analyzed, combined and compared.

The user interface is as close to the familiar paper form as possible, Proefrock said. "We have also developed the electronic entry form that mirrors our [paper] free agent report as a way to provide them a comfort zone," he said.

Bort writes for the IDG News Service at its San Mateo, Calif., bureau.

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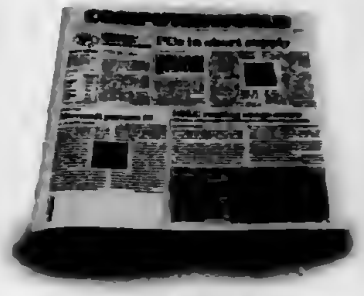

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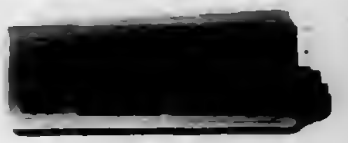

The Newspaper of IS

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UPDATED CLIENT/SERVER TOOLS UNVEILED AT SHOW, 72
NEW PRODUCTS, 76

Railway switches tracks to objects

By Elizabeth Heichler

Norfolk Southern's revamp could save $20M to $30M per year

In a bid to boost its bottom line, Norfolk Southern Corp. in Norfolk, Va., is re-engineering its core railway operations systems with object technology.

By improving the timeliness and quality of information used for tracking the movements of train equipment on the network, the new system will help Norfolk Southern use equipment and personnel more efficiently, company officials said. The hoped-for result is a savings of $20 million to $30 million per year.

The $100 million project will put object technology on-line in an area that is "the lifeblood of a transportation company," said Bob Stvan, information systems project manager. "The new system provides a quantum jump in information available to management."

The goal of Norfolk Southern's key object technology projects (see box) is not only to track all the equipment on the railroad and have up-to-the-minute inventory location, but also to centralize some job functions that have been carried out at railway yards throughout the network.

Norfolk Southern chose Object Studio Smalltalk tools from Westboro, Mass.-based Vmark Software, Inc. because it wanted something to run on OS/2. Also key was the ability to generate C++ or Smalltalk code rather than the proprietary code that many client/server tools produce, explained Michael Cantor, a senior developer. "We liked Smalltalk, and it's a lot easier for a Cobol programmer to power up in Smalltalk than C++," he added.

Still, the move to object-oriented development was a radical shift for the mainframe Cobol shop. In particular, choosing a methodology that employs use cases, which are breakdowns of exactly how a system will be used, was a new way of conducting analysis and design. It led the developers into a much closer working partnership with their customer — Norfolk Southern's Transportation Department — than they were accustomed to in the past.

With object-oriented development, "the user can't just throw the specs over the wall. I can't overemphasize how much time the user needs to commit," said Wayne Cole, senior designer.

In fact, the transportation department was initially reluctant to make the required time commitment. "But now we realize it's the best thing we did," said Brad Fitzgerald, a systems manager in that department. "We wanted a project designed by the user for the user — not by people who didn't know the business.

"I believe we're going to have a product that's far superior to anything we could have had using the old, traditional ways [of designing systems]," he added.

To track train movements, *scanners will automatically read tags on trains as they pass by. Norfolk Southern staff, from left to right: Brad Fitzgerald, Warren Stubbs, Michael Cantor, Wayne Cole and Bob Stvan.*

Improved accuracy

By spring of next year, the new system will be in place at a centralized operations center in Atlanta, where it will be used by up to 300 people per shift. Meanwhile, much of the information about train car movements and locations — once noted on clipboards by people working in the yards — will now be collected automatically by scanners that read tags on trains as they pass by.

More accurate and more timely reporting will be one result of replacing a mainframe batch system with a system that is updated as edits take place. Another benefit will be making information available enterprise-wide that is currently impossible to access from the field, Stvan said.

The Thoroughbred Yard Enterprise System will also provide the information needed to support the Interline Service Management system, a new scheduling system that all rail carriers use. This will allow Norfolk Southern to accurately schedule the route that a piece of rail equipment will take, so customers can find out when a shipment reaches its destination.

The client/server system will use OS/2-based PCs, IBM RS/6000 database servers with Sybase, Inc.'s System 10 and RS/6000 application servers with AT&T Corp.'s Top End transaction processor.

ON SITE

Norfolk Southern Corp.
Norfolk, Va.

Railroad system: Lines extend more than 14,500 miles in 20 states, mostly in the Southeast and Midwest. Revenue for 1994 was $4.58 billion; pretax income topped $1 billion for the first time.

Object technology projects: $100 million effort includes the following:
- **TYES (Thoroughbred Yard Enterprise System):** Tracks and monitors all train activity in 110 railway yards.
- **TLS (Thoroughbred Locomotive System):** Improves locomotive use.
- **CYO (Central Yard Operations):** Enhances route and image portions of TYES to support a new centralized operation. Development began in May 1994; implementation begins early next year and runs through 1998 in a division-by-division rollout.

Goal: Return on investment of $20 million to $30 million per year from improved staff

A world of worries

Much to Bob Stvan's surprise, programming was the least of his worries when his traditional Cobol shop at Norfolk Southern took a new direction and launched a massive object-oriented development project.

"No one tells you that the programming side could be considered almost insignificant," said Stvan, Norfolk Southern's IS project manager. "Development of use cases, rules, consulting with the customer, mapping data and gathering business requirements is 90% of the work."

Upper management support was also invaluable to Stvan. The $100 million project was driven by two senior executives who took ownership early on: transportation vice president Jon Manetta and information technology vice president Charles Moorman.

"That's absolutely 100% necessary in a project this large. Without it, we wouldn't have enough manpower, and there would be resource problems with shifting priorities," the IS manager explained. "But we have the commitment and the resources we need."

Norfolk Southern also found it necessary to bring in outside consultants to help the Cobol programmers get up to speed on the new object-oriented tools and methods.

"Management has to be aware of the talent and resources required to jump into [object-oriented development]. People have got to learn new languages, new technology, new ways to handle data and new ways to think about information," Stvan said. —*Elizabeth Heichler*

Database and Client/Server World

Updated development tools unveiled at show

By Elizabeth Heichler
BOSTON

Users searching for the latest in application development at the Database and Client/Server World show held here earlier this month found a few tools making their public debut. They include the following:

• **Trinzic Corp.** in Redwood City, Calif., announced that in the fall it will ship RuleServer, a distributed business rules processing engine for OS/2. This will allow developers to partition applications and put business logic and rules on a server, gaining better performance and easier maintenance. RuleServer can be used with Trinzic's own application development tool, ObjectPro, or with Microsoft Corp.'s Visual Basic or Powersoft Corp.'s PowerBuilder.

• **JYACC, Inc.** launched JAM Version 7.0, which now includes screen wizards intended to make it easier for business analysts to build applications without writing code or understanding underlying database schemas. The scripting language has been extended so developers can modify objects at runtime, not just during the development cycle. And JYACC has included new data presentation options such as flexible grids, business graphics and tool bars. JAM 7.0 is scheduled to ship in July for Windows (priced from $2,000) and Unix (priced from $6,000). Macintosh and OS/2 Warp versions will follow in the fourth quarter.

• **Magic Software Enterprises, Inc.** in Irvine, Calif., introduced Magic 6, the first Windows version of its tool. The new release also features a forms editing tool kit and allows developers to automatically convert graphical user interface forms to character-based screens. Applications written in previous versions of Magic can be upgraded to Windows using the new release, and both old and newly upgraded versions of the same Magic application can coexist, according to the company. Magic 6 is priced from $2,500 and will be available next month.

• **Computer Systems Advisers, Inc.** in Woodcliff Lake, N.J., has released Silverrun for PowerBuilder, a link to PowerBuilder that allows developers to generate applications directly from Computer Systems Advisers' Silverrun data models. Silverrun for PowerBuilder also generates server-level database schemas for relational databases, including The ASK Group, Inc.'s Ingres as well as databases from Oracle Corp., Sybase, Inc., Watcom International Corp. and Informix Corp. It will be available this month and is priced at $4,500.

• **Popkin Software & Systems, Inc.** in New York previewed the next release of its System Architect at the show. Release 3.1, scheduled to ship in July, will include the ability to create Visual Basic forms from the System Architect Screen Painter.

Client/server high on labor

Application development tools and labor are a small percentage of the total cost of a client/server setup, a recent survey revealed. Instead, the lion's share of the costs are for end-user support from IS staff and end users themselves.

In fact, application development tools and the applications themselves represent only about 4% of the total cost, according to a survey from InfoEdge, Inc., a subsidiary of Stamford, Conn.-based Gartner Group, Inc. In comparison, labor amounts to a whopping 64% of costs.

And, the survey said, "Client/server payback generally occurs in the end-user department, not in the IS organization."

The cost of client/server

End-user labor	41%
End-user support labor	25%
Client hardware and software	9%
Application development labor	8%
Enterprise server operation and other labor	8%
Education and training	5%
Local servers and printers	3%
Enterprise servers	3%
Wiring and communications	3%
Relational database and systems management tools	2%
Miscellaneous expenses	2%
Purchased applications	Less than 1%
Application development software	Less than 1%
Professional services	Less than 1%

TOTAL FIVE-YEAR CLIENT/SERVER COST: $241.8M
COST PER CLIENT: $48,000

Based on a sample site with 5,000 workstations and 250 remote locations, each with PC-based server.

Source: Gartner Group, Inc. Stamford, Conn.

Changing issues

The $1,250 survey is called "Client/Server Computing: Have the Rules Changed?" It covers application development tools and techniques, middleware, systems management, retraining and other issues.

Key application development-related points in the survey include the following:

• Developers must create and implement their own design standards until formal standards are commercially available.

• Project management must be handled differently in a client/server environment. For example, client/server applications call for iterative development — going back and forth with users about how the application should look, what it does and so forth. This process is "difficult for most of today's project management tools," the survey said.

• User satisfaction surveys should be created with user participation and should be handed out twice — immediately after the application is implemented and again four to six months later.

• In terms of selecting tools, fourth-generation languages (4GL) are generally best for workgroup applications that are not too complex. Enterprisewide, highly complex applications are "generally not suited" for 4GLs, the report said. Instead, users should look to complement third-generation languages with modeling tools or integrated computer-aided software engineering environments.

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Briefs

Next ships objects

Next Computer, Inc. said it will deliver a version of its distributed object model, Portable Distributed Objects (PDO), for Microsoft Corp.'s Windows NT operating system later this year. The Redwood City, Calif., firm has also begun shipping the latest version of PDO, Release 3.0, on several Unix server platforms, including those from Digital Equipment Corp., Sun Microsystems, Inc. and Hewlett-Packard Co. Developers can use PDO to create applications objects that can be deployed without modification on any of the server platforms running NextStep, OpenStep or PDO.

InSync updates Passport

InSync Software Corp. in Ronkonkoma, N.Y., has introduced a new version of its Passport application development tool featuring dynamic partitioning for managing distributed applications as well as a rapid application development tool. The advantage to dynamic partitioning, according to the firm, is that developers can decide at runtime which parts of an application should run on clients and which should run on servers. Passport is priced from $3,995 per developer seat.

Objectivity adds services

In an effort to kick-start deployment of applications that use Objectivity, Inc.'s object-oriented database management system, the Mountain View, Calif., company has formed a Professional Services organization. The aim of the group, according to its director, Victoria Perkins, is to focus on sharing expertise in object-oriented software development methodologies and issues in developing distributed, high-availability applications, rather than offering generic application development services.

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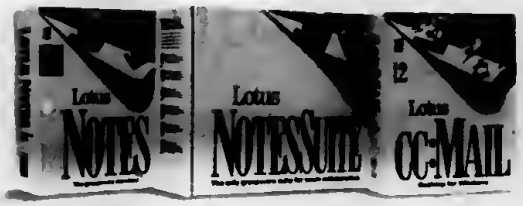

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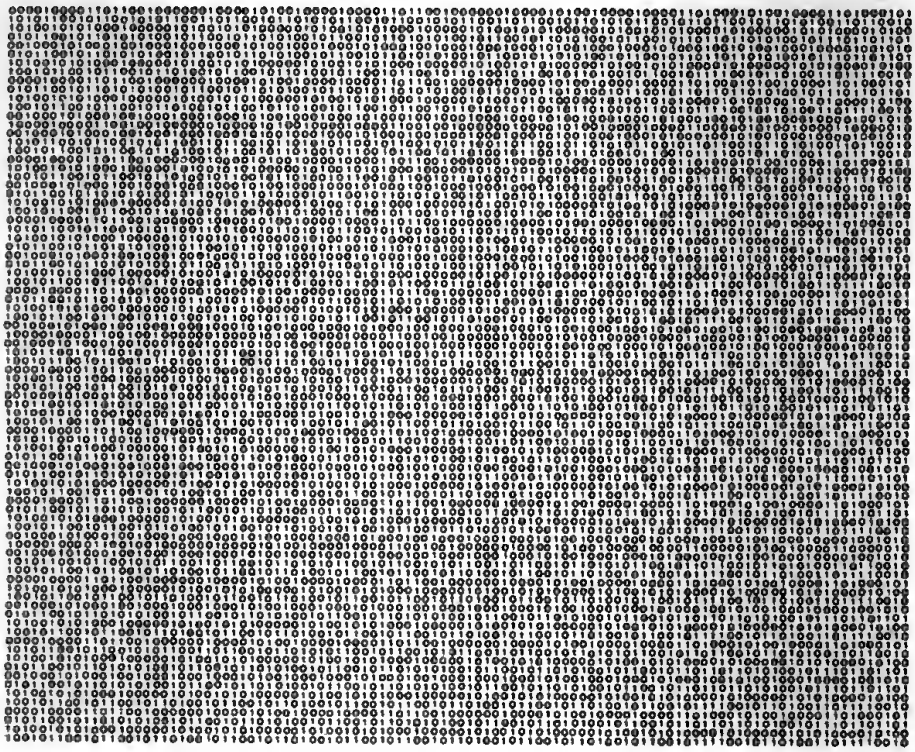

Announcing The Open Parallel

Decision snpport is one promise of information technology that has never been fully realized. Its aim is to help you uncover trends hidden in your databases, so you can manage information to satisfy customers and compete more vigorously.

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To receive *OPUS* information, contact us on the Internet at **http://www.unisys.com/adv** or call **1-800-874-8647, ext. 219.** Because once you can manage information instead of just process data, you'll get a clearer picture of what's really important to your success—your customer.

MetaWare, Inc. has announced the High C/C++ Toolset for OS/2 with DirectToSom functionality.

According to the Santa Cruz, Calif., company, the product supports Distributed System Object Model (DSOM) technology, which allows access to SOM class objects across a network. The High C/C++ Toolset for OS/2 lets users compile C++ source code to directly create SOM-compatible binaries without having to write Interface Definition Language descriptions of classes. The resulting SOM objects can interoperate with SOM objects written in other languages.

The High C/C++ Toolset for OS/2 includes a globally optimizing compiler, source-level debugger, on-line documentation, WorkFrame/2 support and IBM Developer's Toolkit containing a linker as well as resource tools.

The HighC/C++ Toolset for OS/2 costs $595 per license.

▶ *MetaWare*
(408) 429-6382

Ryan McFarland Corp., a unit of Liant Software Corp., has announced VanGui for RM/Cobol, an interface builder.

According to the Austin, Texas, company, VanGui for RM/Cobol lets Cobol developers create Windows applications using Windows controls and Visual Basic custom controls. It was designed to give developers a visual development process for updating the user interface of both new and existing RM/Cobol-based applications. Developers build the user interface by dropping objects onto a screen, modifying their properties through dialog boxes and attaching event-handling code using Cobol statements.

Pricing for VanGui for RM/Cobol starts at $2,500; complete pricing has not been announced.

▶ *Ryan McFarland*
(512) 343-1010

Thoroughbred Software International, Inc. has announced Thoroughbred Environment for Windows, a development environment.

According to the Somerset, N.J., company, Thoroughbred Environment for Windows lets developers implement Microsoft Corp.'s technological advances into their existing commercial applications while using Thoroughbred's Object Dictionary, which defines screens, formats, views and data validation rules. It also lets developers port applications for Unix, DOS or VMS to a Windows environment without rewriting any code.

Thoroughbred Environment for Windows requires 8M bytes of RAM and a 486-based PC running Microsoft's Windows 3.1, 3.11 or Windows NT.

Pricing for Thoroughbred Environment for Windows starts at $250, based on the number of modules and developer seats.

▶ *Thoroughbred Software International*
(908) 560-1377

Bachman Information Systems, Inc. has announced Terrain 500 and Terrain 100/O, expanding its family of Terrain database design tools.

Terrain tools were designed to provide a scalable Windows-based database design environment for client/server databases.

According to the Burlington, Mass., company, database administrators and application developers can use Terrain tools to design and implement new client/server databases for one or several database management systems.

Terrain 500 supports Microsoft Corp.'s Open Database Connectivity. Terrain 100/O supports Oracle Corp.'s Oracle7.

Terrain 500 costs $2,495. Terrain 100/O costs $1,500.

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Source: Survey of COMPUTERWORLD CD subscribers, May 1993.

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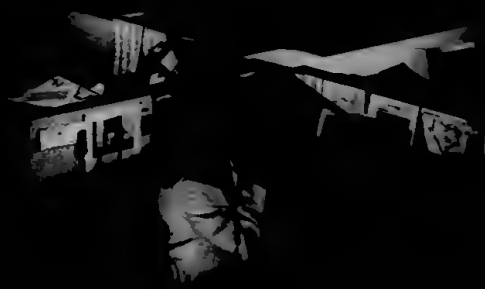

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Management

Mix the INTERNET with the BANKING INDUSTRY and what do you get? Massive security problems. New competitors everywhere. The threat of "disintermediation." IS left out in the cold. No wonder banks are suffering from . . .

FINANCIAL insecurity

BY BRIAN MCWILLIAMS

▶ **BOTTOM LINE:** Bankers are discovering that the Internet can change the rules for conducting business. Here's how an industry that touches everyone is groping for answers — and why information systems' past sins are keeping banks' powerful IS organizations out of the Internet loop.

For companies contemplating the plunge into electronic retailing on the Internet, the World-Wide Web looks like a cross between the work of a crazed strip-mall developer and the Wild West. The risk that a hacker might rustle up a customer's credit-card number is small, but it's enough that most Web shop owners offer only "adware" — pretty pictures and semi-informative text. To place an order, shoppers usually have to go off-line and dial an 800 number.

But changes are coming that may soon make the Internet safe for electronic commerce. The banking industry, not generally known for being a technology pioneer, is moving with uncharacteristic speed to solve the security issue.

"Internet security is an opportunity for us

Financial insecurity, page 80

AUSTIN ADAMS, *executive vice president of automation and operations at First Union Corp., says he sees Internet security as an opportunity*

FINANCIAL Insecurity

CONTINUED FROM PAGE 79

[Achieve it, and] it reinforces in consumers' minds our advantage as stable institutions you can trust," says Austin Adams, executive vice president of automation and operations at First Union Corp. in Charlotte, N.C.

Security is one factor that makes the Internet both an opportunity and a threat to banks.

One big motivation for banks: Holding on to the substantial fees many derive from merchants for processing credit-card transactions. First Union, for example, has more than 35,000 merchant banking customers, according to a company spokeswoman.

And it's not just plastic that's at stake. Some banks are evaluating ways to secure business-to-business payments over the network, so-called check equivalents. Others are examining debit and cash transactions on the 'net.

Conservative estimates put the value of Internet transactions in the year 2000 at roughly $10 billion. "And it could easily go much higher," says Richard Crone, director of KPMG Peat Marwick's center for electronic banking in Los Angeles.

Someone has to process all those transactions, and if banks can't or won't, merchants will find someone who will. That's the opinion of Steve Dieringer, group product manager for electronic services at Banc One Corp. in Columbus, Ohio. "The market wants payments in a bad way," he says. "If banks wait too long, we risk letting others take control."

Will McClellan

"Internet security is an opportunity for us. [Achieve it, and] it reinforces in consumers' minds our advantage as stable institutions you can trust."

—Austin Adams, executive vice president of automation and operations at First Union Corp. in Charlotte, N.C.

Turf wars

Indeed, financial institutions are already feeling pressure from competitors outside the industry such as Microsoft Corp. in Redmond, Wash., CyberCash in Reston, Va., and First Virtual in Los Angeles.

"Networks turn the world upside down. They essentially eliminate our geography and size advantage," says John Doggett, director of applied technology at Bank of Boston Corp.

The Internet also undermines what has been a major barrier for these so-called alternative providers — the expensive infrastructure banks have amassed for processing existing forms of payment such as paper checks, wire transfers and automated clearinghouse functions, including direct deposit of payroll. With the rise of new, network-based payment mechanisms, those investments may simply become dead weight.

"If someone can serve customers electronically, is all our brick and mortar obsolete?" Dieringer asks.

Becoming "disintermediated" — separated from customers by technology and changing markets — is much on the minds of bankers these days. And rightly so, says Bruce Stewart, an Internet banking expert at Gartner Group, Inc. "If a customer's primary interaction with the bank is by machine,"

Financial insecurity, page 84

The Cyberbanks

A partial list of banks that are moving aggressively to offer services on the Internet

Security First Network Bank, Pineville, Ky. (http://www.sfnb.com). Received federal regulatory approval last month to provide a full range of banking services, including the ability to make money transfers or bill payments or access checking account balances over the Internet. The bank is a joint venture of Wachovia Corp. in Winston-Salem, N.C., and Huntington Bancshares in Columbus, Ohio, and was initiated by Cardinal Bancshares in Lexington, Ky. It will use a trusted operating system developed by SecureWare, Inc. in Atlanta. *Source: Secure First Network Bank Web site*

Wells Fargo Bank, San Francisco (http://www.wellsfargo.com). Allows customer inquiries into account balances using Netscape's Navigator secured browsers. The bank also offers transaction histories for checking and savings accounts over the Internet and intends to add other banking functions, such as money transfers and bill payments, this year. *Source: Gailyn Johnson, senior vice president of on-line financial services*

Capital One Financial, Falls Church, Va. (http://www.capital1.com). Offers secure credit-card applications for those using the Navigator browser. It allows applicants to continue in non-secure mode but provides several warnings. *Source: Capital One Web site*

First Union, Charlotte, N.C. (http://www.firstunion.com). Besides building an electronic mall for secure transactions, the bank accepts credit-card applications on the Internet. It warns users if they are not using a browser that supports either Secure Sockets Layer or Secure Hypertext Transport Protocol security protocols. The bank is currently studying how to do remote banking via the network, such as accessing checking account balances and transferring funds. *Source: Tom Bartolomeo, First Union*

Leaving IS Off-Line

If Internet banking is truly the paradigm shift that some say it is, why aren't bank IS professionals leading the way?

Amid all the commotion about Internet security and virtual banking, one group is curiously quiet: bank IS professionals. Indeed, run down the list of bank Web sites and you'll discover most were conceived by marketing or alternate delivery groups and implemented by consultants.

"Everything is happening so fast, we couldn't possibly do this in-house. We just don't have the expertise," says Tom Bartolomeo, vice president of marketing in the Card Products Division at First Union. His group relied on TriNet Services, Inc. in Raleigh, N.C., to design its Web site.

First Union's experience is typical, says Bruce Stewart, an Internet banking expert at Gartner Group. "Marketing spots an opportunity, and it doesn't even occur to them that IS could help," he says.

One reason IS is getting left out of the loop: it drove the last big — and unsuccessful — wave of electronic banking in the 1970s. That effort failed, some say, because mainframe-centric IS managers took a proprietary, command-and-control approach to information access.

"The technology environment of the Internet is very alien to bank IS," says Steve Dieringer, group manager for electronic services at Banc One. So, too, are the small, entrepreneurial vendors banks must deal with on Internet projects. "These are not the blue-suited, IBM types IS people are used to working with."

While there's no harm in going outside to get a Web server up quickly, banks need to keep the long-range picture in mind. That's the view of Dan Eitington, executive vice president of technology banking at First Interstate in Tempe, Ariz. The bank hired Cypress Consulting, Inc. in Sebastopol, Calif., to create its home page, which has been on-line since December.

To achieve the promise of true cyberbanking — offering account information, bill payment, transfers and other services over the Internet — Web sites must be linked to the institution's existing banking systems.

"Someone is going to have to do things like building firewalls and making sure systems are scaled to handle increased traffic flows," Eitington says.

Who better than IS? First Interstate may provide a glimpse into the future of managing commercial Internet projects. The bank's technology banking group, formed this spring and headed by Eitington, combines marketing, IS and phone center experts. Their mission: build the necessary infrastructure and products to lead in alternate delivery of banking services.

"The Internet is everyone's responsibility," Eitington says. — *Brian McWilliams*

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The Means to Make Better Decisions

Providing the means to deliver accurate and timely information to improve work processes and make better business decisions is the job of George Alameda, Chevron U.S.A. Production Company's Manager of Information Technology.

The company is using the SAS System to help with enterprise-wide information delivery. "Our mission is to make financial, operational, and reservoir data available in an easy-to-use format to all the asset teams at work in CUSA Production Co.," says Alameda. "We've found the SAS System is a superior solution for analyzing data, turning data into useful metrics, and guiding our cross-functional teams toward improved work processes."

One team, in CUSA Production's Western Business Unit, is tracking the profitability of individual wells. "It's a tremendously difficult task to optimize our field operations for maximum profitability," says Alameda. "With the SAS System, we can integrate large amounts of data and build a picture to compare one field against another and challenge our asset teams to identify and share best operating practices."

Reaching for the Best

Alameda looks forward to extending the use of the metrics and performance monitoring data to employees trying to improve their work processes. He admits his vision is far reaching, but so is the SAS System. "Our challenge is to be better than the best," he concludes, "and the SAS System is helping us reach that goal."

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FINANCIAL Insecurity

CONTINUED FROM PAGE 80

he asks, "what difference does it make who owns the machine?"

Banks have already seen how network technology can take away their customers — and their funds. Back when merchant credit-card slips were logged and processed on paper in batch at bank branches, the industry had a near-monopoly on the business, Crone says. Then electronic processing came onto the scene, and alternative providers such as First Data Resources and JC Penney Co. Processing Services got into the act. Soon after, merchants were shopping nationally for processing. Today, more than 70% of that market is controlled by alternative providers, according to Crone.

"We are by definition intermediaries," Doggett says. "And that means we are vulnerable."

Disarming the Internet

In hopes of turning the Internet threat into a source of profitable, sustainable relationships with both consumers and merchants, a number of financial services companies are pairing off with technology partners. For the ambitious, the goal is to develop a killer payment application for the Internet. For others, it's simply to develop expertise should the Internet market explode.

The field includes MasterCard, Inc., one of several firms teaming with Mountain View, Calif.-based Netscape Communications Corp., creator of popular Web browsers. Wells Fargo Bank in San Francisco is working on a credit-card encryption scheme with start-up CyberCash.

Visa International, Inc. is in cahoots with Microsoft. And First Union recently joined forces with Open Market, Inc. in Cambridge, Mass., to build what it claims is the first secure electronic marketplace on the Internet.

Clouding the competitive race is the fact that not all banking executives agree that their industry must take the lead in solving the Internet security problem. "It's a great business opportunity for someone, but banking is still predominantly about credit," Doggett says. "What I worry about is who's offering those services over the 'net?"

To date, nearly 400 financial services firms have registered an Internet domain, double the count from a year ago, according to InterNet Info, an Internet consulting firm in Falls Church, Va. But only a handful currently offer any kind of Internet banking services (see story, page 80). For now, many banks seem content to regard the Internet as a strange but exciting new advertising medium. Attracted to the national, albeit narrow, market the 'net offers and the opportunity for two-way communication with customers and prospects, most banks will continue building low-risk, informational Web sites, learning as they go.

And while there's a very real danger of the banking industry moving too slowly on the payment security issue, there are also dire consequences for moving too fast, says Kawika Daguio, a spokesman for the American Bankers Association. "If we get too far ahead of the curve and blow it, it will take a long time to wean people back to electronic banking," he says.

After all, the ultimate weapon banks have over alternative providers is the confidence of their customers. Says Tom Bartolomeo, vice president of marketing at First Union: "Over the years, we have built up a lot of trust. There's a secure feeling that comes from dealing with a bank vs. a nonfinancial institution."

No killer payment application can duplicate that. ■

McWilliams is a freelance writer in Durham, N.H.

Riding Naked Across The Internet

Some Web merchants aren't waiting for security standards

Scrumptious looking even at 640- by 480-pixel resolution, the truffles displayed on Godiva Chocolatier's home page are sweet temptation. And New York-based Godiva, a unit of Campbell Soup Co., makes it extra easy for Internet surfers to indulge their chocolate cravings. Just key in your credit-card number and address, and nearly instant gratification is on its way via FedEx Corp.

But beware of pickpockets on this self-proclaimed "chocolate lover's playground." Godiva's server is not secure, acknowledges David Fry, president of Fry Multimedia, the Ann Arbor, Mich.-based Internet services firm that operates the chocolatier's Web site. That means it's technically feasible for hackers to "sniff" credit-card numbers as they travel on packets from a user's browser across the Internet to Godiva's server.

Godiva isn't the only company using what KPMG Peat Marwick's Richard Crone calls the "Las Vegas" approach to Internet security. He estimates that as much as $100 million worth of unsecured transactions will travel the network this year.

Such numbers worry big credit-card issuers such as First Union. "Many consumers and merchants don't understand the potential for fraud in these kinds of transactions," says Stephen Culp, Internet project manager in the Card Products Division at First Union, which has 35,000 merchant banking customers. Godiva's on-line order form, for example, doesn't even mention the possibility of credit-card fraud, although it does allow visitors to place orders by telephone.

Stanching fraud is one reason some banks are moving with uncharacteristic speed to help develop secure payment systems for the Internet. Under the Federal Reserve Board's Regulation E, if a hacker runs up a huge bill on someone else's credit card, the cardholder is liable only for the first $50 in charges. Banks pick up the rest.

Who's Minding The E-Store?

Many IS executives in the banking industry seem uncertain about their role in their organization's use of the Internet.

Who initiated your organization's use of the Internet?

INDUSTRY	IS	End users	Both	Don't know
Banking	**32%**	**17%**	**34%**	**17%**
Process manufacturing	42%	20%	38%	0%
Retail	39%	19%	35%	7%
Government	32%	20%	46%	2%
Health care	65%	19%	16%	0%

Is there anyone on your staff primarily responsible for Internet use and applications?

INDUSTRY	Yes	No	Don't know
Banking	**35%**	**46%**	**19%**
Process manufacturing	39%	61%	0%
Retail	47%	47%	6%
Government	24%	76%	0%
Health care	27%	73%	0%

Who manages your Internet use today?

INDUSTRY	IS	End users	Out-sourcers	Don't know
Banking	**66%**	**9%**	**4%**	**21%**
Process manufacturing	85%	11%	4%	0%
Retail	77%	7%	9%	7%
Government	68%	16%	14%	2%
Health care	88%	6%	6%	0%

Source: January 1995 survey by International Data Corp. in Framingham, Mass., of 1,000 IS executives at banking and nonbanking organizations with 250 or more employees

Calendar

JULY 17 - AUG. 3

MANAGEMENT

Business Process Re-engineering: Methodologies, Business Process Modeling and Analysis Techniques for the Project Team. Stamford, Conn., **July 17-19** — Focus: Understanding and managing the steps, deliverables and techniques for implementing and supporting the phases of a business process re-engineering initiative. This course provides practical experiences through exercises, documenting and mapping the "as is" business process. Contact: Pierson Applications Development, Inc., Stamford, Conn. (203) 322-1606.

IS Financial Benchmarking and Peer Analysis. San Diego, **July 19-21** — Seminars will include "Data Requirements: Keys to Successful Benchmarking," "Methodologies and Tools: Maximizing the Efficiency of Benchmarking" and "Peer Relationships: Keys to Effective Benchmarking Relationships." Fee: $395 for Financial Management for Data Processing Association (FMDP) members, $495 for nonmembers. Contact: FMDP, San Francisco, Calif. (415) 731-3706.

NCDM '95: 15th National Center For Database Marketing Conference. Chicago, **July 26-28** — Topics: "ROI: The Real Story," "Why Databases Fail: Nine Deadly Mistakes That Will Ruin Your Chances for Success" and "Balancing Sales Channel Performance and Customer Satisfaction." Contact: Margaret Launzel-Pennes, Cowles Events Management, Stamford, Conn. (800) 927-5007.

Total Trainer Program 1995. Toronto, **July 30-Aug. 3** — Also being offered **Aug. 13-17** in San Francisco, **Aug. 27-31** in Orlando and **Sept. 10-14** in Chicago. Keynotes: "The New Trainer: Interactive, Wired and Totally 'Unburnt-out'" by Elliott Masie, president of The Masie Center, and "Creating and Managing a Performance Technology Organization" by Jim Muller, manager of performance technology at Hewlett-Packard Co. Contact: Lakewood Conferences, Minneapolis, Minn. (800) 707-7792.

USER GROUPS

Second Annual Southern California Technical Conference for Midrange Computer Professionals. Costa Mesa, Calif., **July 20-21** — Sponsored by the Ocean User Group of AS/400 users. Fee: $325. Contact: Ocean User Group, Corona Del Mar, Calif. (714) 751-5100.

Real World TeX: The 16th Annual Meeting of the TeX Users Group (TUG). St. Petersburg Beach, Fla., **July 24-28** — Focus: Preparation of documents with TeX — from the author to the publisher and all points in between as well as systems administrators and others involved in providing TeX support in a computer-based environment. Contact: TUG office, Santa Barbara, Calif. (805) 963-1338.

TECHNOLOGIES

Successfully Developing and Implementing Advanced Intelligent Networks. Chicago, **July 18-19** — Contact: Alexandra Early, ICM Conferences, Inc., Chicago, Ill. (312) 540-3083.

OS/2 World Conference & Exhibition. Boston, **July 18-21** — Conference is devoted exclusively to IBM's OS/2, including products, services and training. Contact: SherryNykiel, Miller Freeman, Inc., San Francisco, Calif. (415) 905-2354.

INDUSTRIES

Supply Chain Management: Shared Value Strategies. Morristown, N.J., **July 25-27** — Topics will include sharing risks and rewards, quick response and continuous replenishment and strategies of supply chain management deployment. Contact: Denise Sharp, The Yankee Group, Boston, Mass. (617) 367-1000.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO

David Weldon, Associate Editor/Management, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931.

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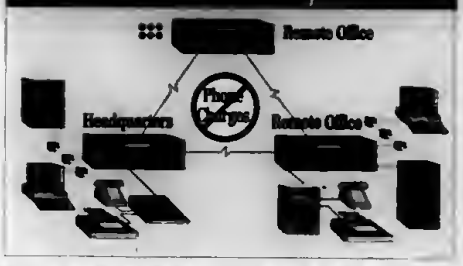

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In Depth

OVER 40, AND YOU'RE OUT

Out of a job, an IS veteran wonders, 'Why me?'

By Larry Cooke

THE AX. Late one day, your boss's boss sends you an invitation through a secretary. "Don't go home tonight until you see me." Guards and piles of boxes appear. One by one, many of your peers, including your boss, are called into his office.

You sit with the big gun and a personnel underling, who hands you an envelope. They direct your attention to page 6, where it says if you leave quietly, don't make a fuss, don't sue or compete and are always on hand to testify for them, the company will give you a small severance. They call it a "package." They take your ID, garage pass and keys. Then they march you out.

They don't call it being fired. That would be crude. They call it "restructuring."

Everyone who was fired is over 40, except one person. That person is 39. Later, a company spokesman tells the press, "They weren't all 'older' workers."

We've all lived through recession, where great companies took it on the chin and in the groin from foreign competition, bad marketing practices or other normal and structural business cycle woes. Today, though, it is in vogue to slice chunks off profitable, recovering companies to make them even more profitable.

Wall Street loves it. A big insurance company sheds 5,00[illegible]oyees, and the stock goes up. A la[illegible] company dumps 5,000 employ[illegible]nd the stock goes up. Two [illegible] merge, dump half the staff, [illegible] stock goes up. Nothing personal; just business.

Most employees today are "employees at will," without tenure rights. I know. I've been there. This story is about employees like me, not about the titans of the boardroom.

GATHERING STORM. You feel stupid. How could you have let this happen? Why didn't you see the signs?

Some of the signs were there. You are probably a white male. You are probably over 40. According to a report on National Public Radio, 5 million workers over 40 are unemployed and another million fear for their jobs.

You've worked hard for the company, received commendations, raises and bonuses. In most cases, you have more than 10 years with the company and are fully vested in some pension rights.

But in your daily duties you notice you are not asked about new technology or assignments. You concentrate on maintaining the stuff you worked on when you joined the company. That's OK, though, because you are

Over 40, *page 93*

Cooke, a former senior MIS consultant, is "pursuing other opportunities." He is 58 years old.

SERVER UP

THEIRS.

[illegible] spend [illegible]

[illegible] you get the [illegible]

[illegible] 20 CPUs. 4 terabytes of storage. 5 gigabytes of main memory. [illegible] 10 [illegible]

[illegible] SPARC module the size of a 3½ x 5 card. And only a SPARC [illegible]

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Over 40

CONTINUED FROM PAGE 89

indispensable You shake it off

You also notice that you don't get training in new technology You shrug it off, you're too busy anyway It's the new hires who are called upon to do the learning; they don't have to put in system changes associated with government regulations or the new merger

If that sounds familiar, start worrying It is a pattern being repeated across America What you learned five years ago is nearly worthless today Most new, exciting technology is less than 4 years old Nobody cares what you know about Cobol on a Digital PDP-11 (No discourtesy meant toward Ken Olsen, who, by the way, isn't there anymore, either)

If you find yourself left out of meetings in which they make important decisions passed by when they plan training and moved around the organizational chart like a piece of furniture, take heed.

THINK ABOUT YOURSELF. What you have done, at least for the past several years, is get wrapped up in the wrong values. You felt you had to do this for the company, unit or department.

Weren't you recognized with a pat on the back, a scroll and even a bonus? Wasn't it worth missing your child's high school graduation in order to put that system change in on time and on schedule? Not only did you get a scroll, your boss's boss (the one who is going to fire you soon) was promoted for good management Surely he will be in your corner

You spent all your time worrying about your schedules, deadlines, projects and commitments But none of that was really yours What you forgot to think about was you

Very few of your colleagues will lift a finger to help you, no matter how many times you had cappuccinos with the gang on Friday nights after work Most will shun you If you call for something, they will be kind and courteous once, maybe twice, but then they want to get on with their lives You can hear the coldness and hardness creep into their voices, the body language palpably evident over the electronic miles They may not say it, but they are scared to death. They've all been told the firings were a one-shot deal None of them believes it

What about all the fine work you did? Your efforts are quickly forgotten After all, didn't you mislay a function once, delaying an important project? And didn't your program blow up at 3 a.m a few times?

Back at the company, receptionists will say for a month or so, "He doesn't work here anymore" After a while, a new receptionist will be there who has never heard of you For a month or two you will be history; after that, oblivion

LOYALTY TO WHOM? Loyalty is a very human trait, but you have to ask — "Loyalty to whom?" Even the great companies, such as IBM, with long traditions of retaining staff through thick and thin, have been shedding workers The old concept of "everything for the company" must die in your soul, or you suffer, not the company

You have to start looking out for yourself You have to assess what business you are in, what you have to sell and who is buying your services. You have to negotiate a strategy where your current company keeps you marketable in information technology; not just popular in your company

Demand your fair share of training Maybe you need to join with others in your situation for collective power Make sure senior management and human resources know about the unequal distribution of training, especially that it affects a certain age group. Make sure they know you want to learn but are busy keeping up old systems

CODA. How am I doing? I don't know yet This was written after I was out of my company about six weeks. I have a new resume I'm still not in love with I'm beginning to tap my network of associates for their advice, not to beg them for a job.

Refurbishing my technical skills is a top priority I've taken two courses toward vendor certification in an exciting new technology. I believe the demand for this skill will outpace the supply of young workers Two courses down, four to go

I'm practicing my two-minute speech, but it still takes five minutes I tried to give it recently to a twentysomething prospective employer, who asked me what I have done with my life that makes it worthwhile for her to hire someone with experience like mine

My life has a whole new reality It is exciting It is hopeful It is full of possibilities that weren't available in my previous position.

Would I trade this new opportunity for the stability (I thought) of my prior position? Today, I think so I would have liked to have been able to change on my schedule and at my discretion rather than having it forced on me late in my career But that's wishing for the impossible

Thinking about this subject in the context of your own career may be painful However, it's less painful while you are still employed and in a better position to choose ■

MYTHS AND REALITIES

"There are lots of jobs out there."

That's true on some level But you are at a severe disadvantage, especially if you are over 50 and have been at your company a long time

The younger of two equally qualified candidates for a technical job will get the position most of the time. Younger workers have made fewer mistakes in their short careers, can show a growing career path and probably have more recent training and experience.

There are jobs out there, but you have to hone your mental image, build a stump speech to tell your life story in two minutes and be convincing and positive. This is not always easy when you've just gotten dumped. Protection for older workers is coming, but it's coming slowly. You really have to hustle if you've lost your job; you should start hustling *before* you lose it

"There's nothing I can do."

There is plenty you can do to protect yourself. Keep a personal file at home containing copies of all your reviews, all awards, information on any restricted stock issued and the circumstances under which it was given Keep any company newsletter write-up about yourself and a description of any positive or negative thing that happened to you in the office.

Write down any manager's public statements of age, gender or racial bias made in your presence, whether directed at you or not. Note who said it, with a direct quote if possible, and who was present. Don't keep this information in the office.

If managers or higher-ups say anything about your performance at your review or at other times, record those statements with as many direct quotes as you can remember. Finally, don't ever say anything negative about the company on voice mail or electronic mail.

"I'm not in a protected group; I'm done for."

Wrong. Over 40 is a protected group; check your state's labor laws. In some states discrimination is an issue if you're over 40, are competent to do work and are harmed (for example, fired) and there is an inference of discrimination (a climate of discrimination, replacement by a younger worker, etc.).

Fighting for things such as the full value of your pension at retirement can mean the difference between hardship and living comfortably.

If you are confronted with immediate dismissal, don't leave until you get answers to the following questions:

- Why me?
- Who decided (Name)?
- Who approved (Names, not "the committee")?
- Is the reason for the termination in writing, and can I have it now?

If your company has a policy against sudden termination, ask why it wasn't followed in your case. Get an answer before you leave the premises. If the company offers you a package and you need a better one, demand it before you leave the premises. Demand outplacement as a minimum concession. Don't sign anything until you see a competent labor lawyer (Your cousin Vinny won't do here.)

"If I work hard in the company, they will reward me and see my intrinsic worth."

That has rarely been true and is less so now. If you work 40 hours a week but have an additional hour to invest, don't invest it in the company. Join a user group, take extension courses, go to seminars and meet your peers.
— *Larry Cooke*

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	Objects in Business	Technology of Objects	Distributed Computing With Objects	Software Developers
Sunday, August 13	**TUTORIAL PROGRAM**			
9:30 a.m. - 5:30 p.m.		T1 OLE 2.0 Primer ●	T2 System Integration Using CORBA E	T3 Design Patterns: Elements of Reusable Software ●
9:30 a.m. - 1:00 p.m.	T4 An Executive Overview to Object Technology N	T5 Choosing the Best Methodology: What are the Options? ●	T6 The Middleware Solution: Implementing Objects for Building Enterprise Distributed Applications ●	
2:00 p.m. - 5:30 p.m.	T7 Objects in Business N T8 Growing a Software Reuse Program ●	T9 Components, Frameworks and Objects ●	T10 Understanding Distributed Object Technology N	
Monday, August 14	**TUTORIAL PROGRAM**			
9:30 a.m. - 5:30 p.m.	T11 Object Models, Strategies, Patterns and Applications E T12 Object-Oriented Business Engineering N	T13 Introduction to Object Technology N	T14 Introduction to Client/Server Development Using CORBA ●	T15 Object Catalyst: A Workshop on Rigorous Object Development ●
9:30 a.m. - 1:00 p.m.		T16 OpenDoc Primer N	T17 Understanding Distributed Object Technology N	T19 Managing Object-Oriented Projects N
2:00 p.m. - 5:30 p.m.		T18 Advanced Object-Oriented Analysis and Design E		
[redacted]				
8:30 a.m. - 10:00 a.m.	• Introduction to Business Objects N • Object Technology and Business Process Reengineering (BPR) Tools ●	• Implementing Object Technology: A Case Study E • Applying Metrics to Object-Oriented Software Development ●	• The Business Case for Distributed Computing N • Using CORBA to Integrate Legacy Systems ●	• A Survey of Object Database Technology Today N • Setting Up a Smalltalk Shop N
[redacted]				
2:00 p.m. - 3:30 p.m.	• Building the Business Case for OT ● • Object Models and Architecture for Business ●	• Testing Object-Oriented Systems and the Classes that Compose Them ● • Patterns and Frameworks: Elements of Reusable Object-Oriented Software ●	• Getting Ready for Distributed Computing: An Introduction ● • Enterprise Reuse: Fact, Fiction, or Both N	• COBOL to Components ● • Dynamic Object-Oriented Programming: Moving Beyond Component Software N
[redacted]				
8:30 a.m. - 10:00 a.m.	• A Manager's Introduction to Object Technology Products and Services N • Introducing Object Technology into Your Organization ●	• Advanced Behavioral Modeling E • Object-Oriented Project Management ●	• Object Architecture: The Key to Large-Scale Reuse ● • A Case Study: Xerox's Migration to Distributed Object Computing ●	• A Comparison of Object-Oriented Languages N • A Jump Start into Client/Server Computing N
[redacted]				
2:00 p.m. - 3:30 p.m.	• Business Object Mangement ● • User Experiences Making Software Reuse Work ●	• Use Cases ● • A Comparison of OLE and OpenDoc ●	• Success Stories with Distributed Object Computing ● • Planning for Large-Scale Distributed Object Technology Implementations ●	• Object-Oriented Architectures and Higher-Order Glue E • Designing Control Flow Mechanisms for Object Programs ●
[redacted]				
[redacted] p.m. - 3:30 p.m.	• Class-Based Reengineering ● • Mapping the Business Model to a Client/Server Application ●	• Implementing Persistent Objects N • Building Object-Oriented Applications on Relational Databases ●	• Real-Time Applications of CORBA E • Distributed C++ Applications and Services: Concepts and Issues E	• A Case Study: Detecting Software Development Failures and Recovering N • From OOA to C++: The Missing Link E
[redacted]:45 p.m. - 5:15 p.m.	• Applying the Object-Oriented Software Development Cycle N • Object Technology and the Mainframe ●	• Iterative Development for Object-Oriented Projects ● • Frameworks and Components, The Path to Reusable Software ●	• Lessons Learned in Distributed Object Computing ● • A Comparison of COM and CORBA ●	• The C++ Standard Library: As Reality Settles In ● • Automating Associations in C++ ●

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Computer Careers

STAFF'S VIEW

Reuben Jacob and Patricia Serret, telecommunications analysts, describe how training worked for them.

CLASSROOM TRAINING DOESN'T ALWAYS CARRY OVER INTO THE WORKPLACE. WHAT MAKES IT WORK FOR SOME COMPANIES IS EARLY MANAGEMENT PARTICIPATION AND CUSTOMIZED CLASSES.

By Leslie Goff

Chemical Bank makes sure it gets the most bang for its training buck. The New York firm began migrating to a distributed client/server architecture three years ago, and at the time, its network control center staff's skills needed an overhaul.

Accustomed to legacy systems, many of the staff knew little about PCs and less about LANs. Moreover, in a short amount of time, they needed to hit the ground running in order to troubleshoot, diagnose and manage the network.

The plan? They jumped into intensive, hands-on training in tandem with the actual network implementation. The key was early management involvement and highly customized classes. Of course, training isn't over. Staff members attend classes two to three days a month, but at this point, the topics generally are more discretionary.

How well did the training carry over into the real world? That's what *Computerworld* asked two of Chemical Bank's networking staff and their managers. Here's what they said.

WHAT WERE THE BIGGEST TRAINING CHALLENGES?

SERRET: The protocol analysis. When you're troubleshooting, it's a lot easier to detect a hardware or other physical problem — a bad cable, a bad card. But when you're trying to troubleshoot a configuration error and you're using something such as Network General Corp.'s Sniffer, you need a lot of experience. That was a big part of the learning curve because everything was so new — the desktop technology with client/server applications and the router environments.

I went to specialized classes on different protocols [where] all the workstations ran Sniffer. We analyzed protocols such as TCP/IP and simulated problems on servers. The live lab work was key.

JACOB: One of the most difficult concepts was that the degree of control over our environment changed significantly. The old technology was very simple to troubleshoot. Now, we have situations where a remote corner of the [network] can affect a seemingly unconnected part. You must broaden your scope quite a bit and look at the network as a whole to see where the problem might originate.

DID ANY SITUATIONS CROP UP THAT WEREN'T INCLUDED IN THE TRAINING?

JACOB: When I came back from the Sniffer training class, we had a mininetwork set up where we analyzed problems. I got a call from a client with two different LANs at our New York plaza location. A server on one [LAN] was having difficulty accessing the server on the other. After troubleshooting from central, where I couldn't see the problem, I had to travel to the remote site to work on it from there.

I used Sniffer and immediately found a problem associated with a router configuration error. But then I found the exact symptom that Sniffer was indicating was erroneous — Sniffer wasn't factoring in a [built-in] exception. So although I had the training, I had to keep in mind that there are exceptions to any troubleshooting gear.

HOW WOULD YOU SUM UP MANAGEMENT'S ROLE IN THE TRANSITION?

SERRET: They were as excited as we were and even attended one of the classes. We worked on the same problems side by side.

JACOB: After each class they asked for a review and [whether] we needed more classes on the subject. There was considerable communication going on, and I never felt I had to be an expert after one course.

WHAT WOULD YOU HAVE CHANGED ABOUT THE TRAINING?

SERRET: In terms of the implementation, everything happened at once, but you could only take so many classes at one time. Sometimes there was a lag time between when we would start encountering problems with something on the network and when we started the classes and actually knew what we were doing.

JACOB: I'd [agree]. Ideally, you want to have training before you get the equipment, but that isn't always realistic.

Trading places, *page 97*

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Trading places

CONTINUED FROM PAGE 96

MANAGER'S VIEW

Steve Bozzo, vice president of voice and data operations, and Pat Molloy, vice president of the configuration management group, offer their assessment of the transition.

DID THE STAFF SEEM UNNERVED BY THE TRAINING?

MOLLOY: No. We knew the faster they learned, the better for us, so we provided tools and training that eliminated anxiety that might have been there.

WHAT WERE THE BIGGEST TRAINING CHALLENGES?

MOLLOY: There were some problems in router operations on particular protocols. People understood them but didn't have a good understanding of what features would help to manage, maintain and troubleshoot the [network]. We were able to customize the courses for the group. That shortened the length of training while providing the appropriate skills to the appropriate people.

DID YOU HAVE A LEARNING CURVE AS WELL?

BOZZO: Yes. Chemical Bank was going through a major technology shift, so our clients were responding differently based on this change, and we had to react to that. Users were often frustrated and needed help and additional training.

MOLLOY: I'm more of a line manager, so I deal with the technology day to day. I have to be a technology leader to the users, so my skills have to be as good if not better than my staff's. The closer you get to the problem, the more you have to be knowledgeable to assign the right people to solve and understand the complexity of the problem.

HOW DID YOU HELP THE STAFF THROUGH THE TRANSITION?

BOZZO: First, we freed up their time and made sure they knew our commitment to the training. Then because of the complexity of the technology, [we knew the] class work would have to be hands-on to be effective. We also made sure the funding was in place.

MOLLOY: Also, part of [each employee's annual] review process is to determine what his training needs are. We identify an area of weakness and commit to helping them get the training they need.

HOW WOULD YOU ASSESS THE STAFF'S PROGRESS?

BOZZO: We have a skills matrix for each individual that identifies the courses they've taken, their strengths and weaknesses. So far, they've picked everything up to the point that they're out there solving problems.

MOLLOY: In any new endeavor, you'll have people who make the grade and people who don't. Pat [Serret] and Reuben [Jacob] exceeded our expectations. Most people met our expectations. Others were overcome by the anxiety. We assigned [those people] to work with the ones who were already coming up to speed to build their confidence and remove some of the anxiety.

Obviously, some people haven't made the contributions we'd like them to. The consolation is that our older technologies haven't gone away, so there's sort of a dichotomy between the people who couldn't transition as fast and are training more gradually to move into support roles for the new environment.

WHAT ADVICE CAN YOU GIVE MANAGERS FACING SIMILAR SITUATIONS?

MOLLOY: Participate in the training. Stay focused and committed to postclass, ongoing, on-the-job training.

BOZZO: Make the commitment early. That's a key ingredient to success. And stay positive. We tried to let the staff know there are no sins of commission, only sins of omission. If they were trying something new, we were much more lenient and forgiving than if they tried to avoid a problem or pass it off to someone else. We gave them the feeling that we weren't going to come down hard if they made mistakes. That made a lot of difference. ■

Goff is a freelance writer in New York.

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OS/2, PM, IEF 5.3, COBOL, COBOL II, ASSEMBLER, 370 BAL, CICS, IMS, APS, DB2, SQL, CSP, TELON, PL/1, SAS, SAP R2/R3, ORACLE FORMS 4.0, BACHMAN, POWERBUILDER, SYBASE, UNIX, C, C++, OOP, OOA, OOD, VISUAL BASIC, MICRO FOCUS COBOL, AS400, RPG, RISC/6000, AIX, SMALLTALK, DATA WAREHOUSING

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This individual will be responsible for marketing IMR software development, software maintenance, migration/conversion, and systems consulting services in the Midwest region. Candidates must have at least 3-5 years sales experience and proven track record of selling systems related services with a local or national company.

IMR offers excellent compensation and a comprehensive benefits package. Interested candidates who are available immediately and willing to relocate should apply by mailing or faxing a detailed resume, including salary history and contact tele phone to:

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Clearwater, FL 34621-3442
Tel: (813) 797-7080/
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Financial systems applications analyst/programmer. Duties: under general direction from VP Systems Development: independently design, program and test retail banking applications software (for use in bank accounts, loans, ATM service, debit/credit cards, etc.) for the world market. Analyze specifications and requirements for financial services systems development to comply with legal and technical protocols, particularly in Pacific Rim markets, coordinate development and programming efforts with financial systems analysts, programmers and software engineers to ensure successful integration of banking application software systems components. Requirements: MBA in Management Info Systems, MS in Computer Science, or combination or education/experience deemed equivalent to either degree as determined by an official authorized to grant diplomas and confer college credits). 5 years in job offered or 5 years managing/marketing software applications development & computer systems projects to the banking and finance industries with specific emphasis in lending, proficiency in business applications programming in COBOL, C, & SQL evidenced by 1 year of experience, and travel (~10% of position) to Far East. Hrs. M-F 8:00 am to 5:00 pm, 5-6 hrs/week of OT. Salary: $3,466.66/month. Send resume to Employment Security Commission, P.O. Box 326, Greenville, SC 29202. Attn: Wende Phillips. Job Order Number SC2000153

THE SABRE GROUP

The SABRE Group, an affiliate of American Airlines responsible for the development and distribution of travel industry products and information services is currently hiring for its Dallas/Ft. Worth Headquarters and its Tulsa Computer Center. The SABRE Group offers competitive salaries, travel privileges and a flexible benefits plan to fit your particular needs.

SABRE DECISION TECHNOLOGIES (SDT)

APPLICATION PROGRAMMERS - DALLAS/FT. WORTH

- Visual C++, MFC, Windows NT. Minimum 1 yr. experience for new development of a resource management tool for ground handling companies.
- C++, Oracle, OOD. Minimum 2 yrs. experience for new development in cargo systems.
- SQL, Visual Basic or C++, RDBMS, Sybase or Oracle with systems administration and applications development.
- GUI, X-Windows development. Minimum 2 yrs. experience required.
- Data Base Administrators and Developers. Minimum 3 yrs. Unix based applications required. Oracle or Sybase preferred.
- Tesseract Programmer. Minimum 2 yrs. Tesseract experience in a COBOL/IMS environment.
- PL/1, IMS, DB2 Programmer. Minimum 2 yrs. experience. Human Resources, financial applications experience and Visual Basic a plus.
- Technical Writer. 2 to 5 yrs. documentation experience in a development environment required. Must read source code, C,C++, DOS commands, and Unix Shell Scripts.

SYSTEMS DEVELOPMENT AND SUPPORT - DALLAS/FT. WORTH

- Network installation and support. Prefer knowledge and/or experience with DOS, OS/2, Microsoft Windows95, Access Server Plus, Microsoft NT and NTX. Minimum 1 yr. experience, pager support and extensive travel required.
- Network Systems Developer. 5 yrs. core systems level experience and excellent C coding skills required. Pluses are LAN/WAN protocol analyzer experience, C++ and object oriented design skills, development in IPX/SPX, TCP/IP (BSD Sockets) or X.25.
- Junior Network Systems Developer. Solid C programming skills with 1 yr. at systems level required. LAN/WAN protocols, Novell NLM SDK, Unix, or Microsoft NT a plus. Must be a team player with excellent trouble-shooting skills.

INDUSTRIAL ENGINEERS/OPERATIONS RESEARCH - DALLAS/FT. WORTH

Multiple openings for local and foreign projects. Must be willing to travel. Process analysis, re-engineering, implementation and simulation experience required. Airline experience a plus.

APPLICATION PROGRAMMERS - TULSA, OK

- IMS/DB/DC and DB2 DBA's. Experience must include 3 yrs. IMS DB/DC and DB2 Data Base Analyst experience. Oracle/VMS and Teradata preferred. Problem Resolution and Disaster recovery a plus. On call production pager support required.

Supporting AA's fleet maintenance and engineering systems

- C, C++, Visual Basic, Windows SDK. Minimum 2 yrs. experience.
- C, C++, Oracle development, UNIX, Forms 3.0. Minimum 2 yrs. experience
- C++, UNIX, IMS, DB2, DB/DC. Minimum 2 yrs. experience.
- PL/1, JCL, IMS with one or more of: DB2, Telon, QMF, on line or batch programming IMS or VSAM. Minimum 2 yrs. experience.

Supporting Financial and associated applications

- Telon/COBOL, DB2 batch programming, JCL, TSO Utilities. Minimum 2 yrs. experience with Telon.
- PL/1 and SAS programming. Minimum 1 yr. experience with each. VSAM preferred.

Please forward your resume with cover letter stating position of interest to:

TULSA POSITIONS
Sabre Decision Technologies
Dept. TCW695
MD 316, Box 582809
Tulsa, OK 74158-2809

DALLAS / FT. WORTH POSITIONS
Sabre Decision Technologies
Dept. HOOCW695
MD 4128, P.O. Box 619616
D/FW Airport, TX 75261-9616

SABRE COMPUTER SERVICES (SCS)

SENIOR SYSTEM INTEGRATOR - DALLAS/FT. WORTH

Direct report to VP of Technology Planning and Architecture. Design of infrastructure to provide access to CRS data. Preferred experience with structured data access techniques, protocols, APIs, GUIs, functional processors, remote procedure calls, TPF systems, multimedia development toolkits and general 3rd party interface requirements for accessing CRS data and integrating with other data sources and suppliers.

MULTIMEDIA DESIGNER/INTEGRATOR - DALLAS/FT. WORTH

Design and integrate multimedia applications. Prefer experience with protocols, APIs, GUIs, remote procedure calls, multimedia development toolkits, including authoring tools such as Macromedia Director or Authorware PRO. Photoshop tools, video and sound,editing tools. Previous experience with general 3rd party interface requirements for accessing CRS data as well as integrating with other data sources and suppliers. Solid background in Visual Basic and C++.

PRODUCT PLANNER - DALLAS/FT. WORTH

- Requires a background in sales, marketing or product management of distributed systems equipment and services. Experience developing internal sales and marketing documentation, business plans and competitive analysis required. A Bachelor's degree and strong oral and written communication skills are necessary. Knowledge of financial analysis and budgeting desirable.

NETWORK/SYSTEMS MANAGEMENT SENIOR DESIGN SPECIALIST - DALLAS/FT. WORTH

- Plan the architecture of networks, systems and protocols to implement an enterprise-wide distributed systems management solutions for AMR. Extensive technical knowledge and practical experience in developing and implementing large scale, distributed computing solutions required. Prior experience and training in network and systems management disciplines in a multi-protocol heterogenous environment is highly desirable. Experience with Management Systems, associated tools, and utilities is also highly desirable.

NETWORK ANALYSTS - DALLAS/FT. WORTH

Extensive experience in traffic/performance analysis. Knowledge of Northern Telecom, Ethernet, VAX/VMS and CISCO Router a plus.

WINDOWS PROGRAMMER - DALLAS/FT. WORTH

2 + yrs. Windows Programmer experience, Visual basic, Microsoft Office/MS Products and mail enabled applications development required. C,VBA, Relational Database experience a plus.

UNIX SYSTEMS ADMINISTRATOR - TULSA, OK

5+ yrs. UNIX Systems Administration experience required. Experience with SUN Solaris, HP/UNIX, and/or IBM/AIX preferred.

IMS/DB2 SYSTEMS PROGRAMMER - TULSA, OK

Previous systems programming experience with IMS and DB2 required. Experience with BMC products, mainframe assembler, REXX and MICS a plus.

PROGRAMMER ANALYST - TULSA, OK

Programming experience in PL/1 and/or COBOL, JCL, ISPF, CLIST, and REXX. Experience with mainframe assembler, REXX, DB2, IMS, SAS, or MICS a plus.

MANAGER, DATA CENTER CONNECTIVITY RESOURCE PLANNING - TULSA, OK

Manage a large connectivity planning team of analysts responsible for end-to-end capacity planning tasks and functions. Experience with DEC, IBM, STRATUS, SUN, SP2 and CISCO equipment a plus. Knowledge of VMS, UNIX, VOS and AIX operating systems an advantage.

MANAGER, DATA CENTER COMMERCIAL RESOURCE PLANNING - TULSA, OK

Manage a large connectivity planning team of analysts responsible for end-to-end capacity planning tasks and functions. Experience with Hitachi, IBM and AT&T equipment a plus. Knowledge of MVS, UNIX, AIX and Teradata operating systems an advantage. Manager positions require a minimum of 5 yrs. IMS experience plus 2 + yrs. capacity planning leadership. Must have previous experience in product management, quality management, and vendor interface. Strong leadership skills with heavy customer engagement experience required. Additional requirements include excellent written and verbal communication skills and proven interpersonal and management skills.

DATA CENTER CUSTOMER SERVICES REPRESENTATIVES - TULSA, OK

Define and implement product marketing plans, resolve customer issues, identify new product functionality needs and matrix with multiple organizational groups to implement customer service improvements.

Sales and/or marketing work experience with a computer service provider required as well as superior presentation, oral and written communications skills and customer management skills. Strong team player with leadership and project management skills preferred.

CRS PRICING SYSTEM ANALYSTS - TULSA, OK

Positions involve updating various commercial or premise databases for SABRE's Workflare Pricing System. Applicants should have native SABRE or CRS functional pricing experience, knowledge of passenger tariffs/international fare construction principles and good PC fundamentals. Candidates must possess strong analytical skills and be able to work shifts and weekends.

TPF SYSTEMS PROGRAMMER - TULSA, OK

Provide TPF Database and systems support for the TPF environment. Experience with TPF Database and Control Program Internals. Thorough knowledge of IBM Basic Assembler Language, TPF Concepts, Macros, Text Tools, debugging tools and dump analysis are required.

STRATUS - TULSA, OK

Minimum of 3 yrs. "C" programming experience in a STRATUS/VOS environment required. Experience with communication software X.25 and SNA preferred.

Please forward your resume with cover letter stating position of interest to: Sabre Computer Services
P.O. Box 582809,
MD 311, Dept. CW626,
Tulsa, OK. 74158-2809
FAX - (918) 292-4206

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Research Directors

Our client, Gartner Group, is the runaway leader in strategic market analysis and consulting on information technology, with over 1,000 professionals providing customized information technology advice to more than 10,000 clients worldwide. We have two immediate openings for Research Directors in the Applications Development Technologies group, in either Stamford, CT, Santa Clara, CA, Burlington, MA, Atlanta, GA, Chicago, IL, or Dallas, TX.

Successful candidates will have at least ten years' progressively responsible experience working for successful Fortune 500-sized IS organizations, or diversified experience in the client/server tools industry or consulting firm providing large-scale client/server solutions. The ideal candidates will have deep technical and industry knowledge and the potential to become a highly visible expert in either:

- Client/server application development tools
- Software maintenance and re-engineering tools and methodologies

Candidates must be able to analyze current products, vendors, and technologies, and use their industry knowledge to predict future trends and issues in the industry. Candidates must also be able to use their technical and business acumen to formulate clear, actionable business-focused strategies which can be presented to senior IS and corporate management. Deliverables include written research findings, large conference presentations, and frequent client interaction.

Please forward resumes in confidence to: Huntington Group, c/o GG, 700 Canal Street, Stamford, CT 06902 or FAX (203) 975-6661, or via World Wide Web at http://www.mecklerweb.com/careerwb.

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Technical Consultant for computer consulting company for assignment in Columbus, Ohio. Design, development & testing of telecommunications network software system on distributed fault-tolerant architecture. System test planning. Develop automatic test scripts and execute tests to ensure network configuration and system functionality. Network verification and system validation to detect and report network system problems. Tools: C/C++, UNIX Shell programming, Perl, FDDI communication protocols including TCP/IP, client/server architecture, queuing theory, SUN workstation. Requirements: M.S. in Computer Science as well as six months experience in the job described or six months experience with: UNIX, SUN workstation, Shell programming, Perl, LAN analysis on FDDI network, client server programming with TCP/IP. Graduate education must include one project using C++, as well as one course each on Fault Tolerant Computing and Protocol Engineering for networks. 40hrs/wk, 9am - 5pm Mon - Fri, $45,000/yr. Send 2 resumes & cover letters (NO CALLS) to J. Davies, REF # 1109, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216.

Computer Training Consultant: For university in SE Ohio. Develop and coordinate a range of end-user training programs. This includes organizing, evaluating and coordinating the use of audio, video and computer based training materials. Organize, distribute and produce original and existing user documentation. Requirements: Bachelor's or foreign equivalent in Computer Science or Computer Engineering, one year in job described or one year exp with micro-computer end-user support, coordinating and conducting computer training seminars. Exp. must include 6 months working with MS DOS, Windows Environment, Macintosh operating systems and at least one software package from each of the following areas: Spreadsheet Software, Database Software, Desktop Publishing Software, Communication Software, Internal Tools, Antiviruses and Repairing Utilities, and Wordprocessing. 40 hrs/wk, 8:00am-5pm Mon-Fri, $26,350/yr. Send two resumes & cover letters (no calls) to G. Maugans, REF# 1042, Ohio Bureau of Employment Services, PO Box 1618, Columbus, OH 43216.

Software Engineering Consultant to design, develop, document, and maintain computer information software for products forecasting, business marketing, and material ordering and receiving system of clients; analyze software requirements to determine feasibility of design; work with hardware designers to evaluate interface between hardware and software and performance requirements of overall system; define and develop software system testing procedures, programming, and documentation; consult with clients concerning maintenance and enhancement of the applications; provide technical support, including training users, handling user questions and installing software. Require Master's in Comp Eng and 1 yr exp as an Asst. Eng which includes using Fortran, C-language and True Basic. Coursework must include Operating Systems, UNIX Operating System, Database Theory and Digital Image Process. 40 hr wk, 9am-5pm, $45,000/yr. Send resume to 7310 Woodward, Rm 415, Detroit, MI 48202 - Ref No. 94288. Employer Paid Ad.

Software Engineers . . . .

Decision Focus Incorporated is a management consulting firm specializing in the use of quantitative management science techniques to solve strategic problems for industry and government. Our continuing growth is creating immediate opportunities for talented and energetic Software Engineers to join our consulting practice as Associates. Duties include working with clients and with other DFI Associates and Principals to design, develop, and field high quality custom application software to model and solve strategic problems, and to help evolve clients' IT capabilities to meet present and future needs.

Candidates for positions as Software Engineering Associates should have a degree in Computer Science, Applied Mathematics or Engineering, demonstrated skill with at least one high level programming language, strong problem solving and analytical skills, and a commitment to professional growth. As this is a consulting position, excellent oral and written communications skills and a desire to interact with clients are essential. Experience is also desired in several of the following areas: computer system analysis and design, GUI development, database design using commercial DBMS, integration of systems using off the shelf components, and application of Operations Research techniques and mathematical modeling.

DFI offers a competitive compensation package including employee stock ownership and significant opportunities to expand your skill base. To apply, please send a resume and cover letter, with salary requirements, to:

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or e-mail to [illegible] (ASCII only, please)

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Youngtech, the Object-Oriented Technology Co., has immediate openings on the advanced software R/D organization seeking professionals and top college graduates who have a Ph.D. or Masters degree in CS, CE with strong background in UNIX/C/C++ and experience in one or more of the following would be a plus: OOA, OOD, X-Window, MS-Windows, GUI, Sybase, Oracle, Informix, Internet, X.25, Frame Relay, TCP/IP and Networking.

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Management Analyst: Analyzes business systems and operating procedures at offshore exploration and production company to devise most efficient methods of accomplishing work. Responsible for information systems, automated invoice processing, operational cost controls and economic evaluations regarding future production and revenues of drilling operations. Responsible for selection and implementation of new systems, including installation and personnel training. Utilizes oil and gas specialty software for accounting, log analysis, seismic data analysis and economic projections. Utilizes Computer Aided Software Engineering (CASE) products to build custom data models and develop in-house applications for inventory control, cost control, offshore regulatory control and budgeting. Provides user support to company personnel regarding hardware and software problems. 40 hours per week, 8:00 a.m. to 5:00 p.m. $53,840 per year. Must have proof of legal authority to work in the United States. Requirements: 1. Two years experience in utilizing CASE tools to develop custom software for inventory control, cost control and budgeting. 2. One year experience in designing and implementing multi-user systems involving combined mini computers and networked PCs. 3. One year experience in training users of specialty commercial software and custom-designed information systems. Experience can be obtained concurrently. Contact: LA Office of Employment Security, 6701 Airline Highway, Metairie, LA 70003-5100. Job Order number 566627.

PROGRAMMER ANALYST - 40+ hrs/wk, 8:30am-5:00p.m. $38,500/yr. Plans, develops, tests and documents computer programs for Windows and DOS utilizing C/C++, Microsoft SDK, DDK and Graphical User Interface Design Methodology. Converts and localizes the English Version of software into Far East Language versions of software for use in the Far East. Uses Internet tools such as FTP, Gopher, Wais and WWW to get the information and utilities from remote sites or posts news via Internet. Consults with users in the Far East to identify current operating procedures and clarify program objectives. Formulates plan outlining steps required to develop programs, using structured analysis and designs. Converts project specifications, using flow charts and diagrams, into sequence of detailed instructions and logical steps for coding into computer language. Business contact in countries in the Far East. Fluency in spoken and written Japanese, Korean or Chinese. Masters Degree in Computer Science required. One year experience in programming with C/C++, Microsoft SDK and Graphical User Interface Design Methodology, Internet Tools (FTP, Gopher, Wais, WWW). Business contact should be in the software industry in the Far East. Must possess knowledge of Advanced Computer Graphics and Advanced Operating System. "Employer Paid Ad". Send two resumes and cover letters (no calls) to K. Shockey, Ref #1117, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, Ohio 43216.

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Alex Pelluksi, Director, Computer Center
University of Detroit Mercy
4001 W. McNichols, P.O. Box 19900
Detroit, MI 48219-0900

UNIVERSITY OF DETROIT MERCY

TECHNOLOGIST

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Requirements include a B.A. in M.I.S. or Computer Science along with 8-10 years experience. Must have experience with AS/400 technical support and applications development (RPGIII), SNA, TCP/IP, Windows, Novell and OS/2. Novell 3.XX and Unix administration skills are desirable.

RCCL offers competitive salaries and a generous benefits package. Please submit resume, (Technologist), to Human Resources, Royal Caribbean Cruises Ltd., 1050 Caribbean Way, Miami, FL 33132. EOE

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PROGRAMMER ANALYST

for County Government office in Southwest Arizona. Design, analyze, develop, code, test and implement software. Annual salary range $30,488-$42,984 DOQ. 40 hrs. wk. 8:00-5:00 M-F.

To qualify for the Programmer/Analyst position you must have forty semester hours of post high school course work in computer science or management information systems, two years of progressively responsible work experience in programming and two years of analysis experience. Desirable experience would include IBM/36, AS/400 and RS/6000, RPG and COBOL programming experience is preferred. PC application programming is desirable.

Application form required, call or write: Yuma County Personnel Department, 198 South Main St., Yuma, Arizona 85364 (520) 329-2715 or fax (520) 329-2125. Application deadline: July 14, 1995 5:00 p.m. MST.

Michael Gray

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- **C/MICROFOCUS COBOL**
- **COBOL/CICS/NATURAL**
- **IMS/DB2/IDMS**

KCS has offices in Pittsburgh, Atlanta, Phoenix, Cleveland, and San Francisco.
KCS Computer Services, Inc., 777 Penn Center Blvd., Suite 600, Attn: CW6, Pittsburgh, PA 15235-5906
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Associate Director, Retail Systems - Manages all retail application systems. Requires experience in consumer finance or retail systems and programming, management, distributed systems, and telecommunications. **Response code: ADCW6/26**

Manager, Retail Reporting - Manages applications to analyze and report on company's retail lending operation. Requires experience in systems and programming, management and providing access to data. **Response code: MRRCW6/26**

Manager, Retail Technical Support - Manages technical solutions for retail lending operation. Requires management technical experience with on-line and data communications systems. **Response code: MTRCW6/26**

ASSOCIATE DIRECTOR, DATA CENTER

Manages areas of disaster recovery, problem/change management, storage management and technical requirements of the computer operations. Also approves new applications requiring data center services. The managers of Data Operations, Production Services and Network Control Center reports to this position. Requires Bachelor's degree in Computer Science or related program, five years of Information Systems and Services experience, and three years of management experience. **Response code: ADDCW6/26**

PRODUCTION SERVICE ANALYST

Performs daily production schedules for mainframe operation using CA-7 auto-scheduler. Problem determination and resolutions are key factors in this job. Requires two plus years experience in Operations/Scheduling and must be proficient with JES2 and JCL. **Response code: PSACW6/26**

SENIOR NETWORK TECHNICIAN

Our Network Technicians are responsible for the operation and support of our private hub of a VSAT satellite communication network to all branch locations. Requires technical degree and four years of related experience. **Response code: MTRCW6/26**

COMPUTER ANALYSTS

As an analyst, you will provide the systems which link the company's national branch network. Your responsibilities will include analysis, coding and testing of new and existing application programs. Qualifications include a Bachelor's or Associate's degree, or equivalent experience, with effective communication and math skills.

Project Analyst (XYCOR)-Coordinates work on a XYCOR insurance system in a mainframe CICS - COBOL environment. Requires eight plus programming and analysis experience and project leadership. **Response code: PACW6/26**

COBOL Project Analyst (AS400)-Designs, codes and tests COBOL application programs for a large AS/400 Network. Requires five years COBOL experience and four years designing experience on AS/400. **Response code: CPACW6/26**

COBOL Programmer/Analyst (Mainframe)-Analyzes, codes and tests application programs in a mainframe MVS/XA environment. Requires three plus years programming/analysis experience. **Response code: MTRCW6/26**

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Provides technical support for branch network, and assisting in distribution and installation of system software. Requires Bachelor's degree or one to three years of related experience on AS/400. **Response code: SAACW6/26**

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Programmer Analyst (2 openings) to perform maintenance and production support of an insurance application using CICS, PL/I JCL VSAM TSO/ISPF INTERTEST MVS/ESA on IBM 3090 and analysis, design, development testing and implementation using C/C++ UNIX RDBMS SYBASE SQL and MS WINDOWS Reqs Bachelor in Computer Science Systems Analysis, Computer Information Systems, Computer Electrical or Electronic Engg Math or equiv in ed & exp. Will accept 3 yrs college ed plus 3 yrs exp in job offered or related occup in lieu of required ed & exp 2 yrs in job offered or 2 yrs related exp as Systems Analyst Programmer Analyst Lead Systems Analyst, Software Engineer or Consultant Must have some related exp including supporting database projects being developed design, development & system testing and using each of the following IBM 3090 CICS MVS/ESA TSO/ISPF UNIX DB2 C JCL and RDBMS $50,000/yr 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave Room 415 Detroit MI 48202 Ref #90695 "Employer Paid Ad"

SENIOR SOFTWARE ENGINEER (2 positions) 40 hrs./wk. 8am-5pm, $85,000/yr Carry out requirement definition, system analysis, system design system assurance, project management coding and testing of computer s/w applications on IBM 3090 mainframes under DB2 CICS and COBOL environment. Require Bachelor's degree in Computer Science or Electrical Engineering or equivalent" ("Equivalent includes 10 yrs. expr in job offered or related occupation in lieu of Bachelor's degree and 6 yrs of expr) and 8 yrs expr in job offered or 8 yrs expr as Programmer Analyst and/or Sys-tems Engineer and/or Consultant Reqr work experience in project management and in analysis design and development of computer application systems on IBM 3090 mainframe utilizing DB2 CICS and COBOL "Employer paid ad" E O E Send resumes to 7310 Woodward Ave. Rm 415 Detroit, MI 48202 Ref No. 109156

PROGRAMMER ANALYST (2 positions) 40 hrs/wk 8 a m 5 p m $46,500/yr Carry out the analysis of program specs program design coding and testing of software application systems on IBM m/f utilizing DB2, CICS and COBOL. Prepare test suites and assist in implementation of the system Requires bachelor's degree in Computer Science or Applications or Electrical Engineering Reqr 2 yrs expr in job offered, or 2 yrs. expr in Systems Analysis &/or Programming &/or Software Engineering &/or Computer Consulting Reqr work expr in development of s/w systems on IBM m/f utilizing DB2 CICS and COBOL "Employer paid ad" E.O.E. Send resumes to 7310 Woodward Ave Rm 415 Detroit, MI 48202 Ref No. 112895

ASSISTANT DESIGN ENGINEER Design and develop specific software programs for automatic test equipment. Design prototype test equipment design software outline to interface with computerized test method. Prepare using design cad manufacturing, drawing, specification and wiring list. Salary $14.52 per hour 40 hour week (8 00 a.m. 4 45 p.m). Overtime as needed at a rate of $21 78 per hour Requirements, Bachelor's degree in Computer Science Must be able to read, write, and speak Korean so as to assist Korean Engineers in design projects. Also must have completed one graduate level course in artificial language and artificial intelligence Send resumes to MESC, 7310 Woodward Ave., Rm 415 (Ref #83395) Detroit, MI 48202 Employer paid ad

PROGRAMMER ANALYST - Design computer software systems in both English and Arabic using visual basic and visual C++. Upgrade, install, troubleshoot, diagnose local and wide area networks. Salary, $16.00 per hour, 40 hour week (9 00 a.m. - 5:00 p.m.). Requirements, Bachelor degree in Electrical Engineer. Must be able to perform programming in both English and Arabic. Send resumes to MESC, 7310 Woodward Ave., Rm 415 (Ref #78995) Detroit, MI 48202. Employer paid ad.

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Systems Analyst to analyze business requirements, convert business and technical operations into logical flowcharts, design data structures in RDBMS and develop and prepare technical specifications, write programs using UNIX, C, INFORMIX, ORACLE, Visual Basic, Visual C++, Embedded SQL, COBOL and JAM, prepare test procedures and perform unit levels and system level testing, optimize code and develop performance-enhancing algorithms. Reqs: B.S. in Computer Science, Computer Information Systems, Electrical or Electronic Engg., Systems Analysis or equiv. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or in related occupation in lieu of required ed & exp. 2 yrs. in job offered or 2 yrs. related exp. as an Associate Systems Engineer, Programmer Analyst, Programmer, Systems Analyst to Consultant. Must have some related exp. in system analysis and design and using UNIX, C, COBOL, INFORMIX 4GL, Embedded SQL, Visual Basic and Visual C++. $45,000/yr. 40 hrs./wk. 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref #103995 "Employer Paid Ad"

Systems Analyst (Chicago, IL) Dsgn/dvlp RDBMS using Oracle RDBMS & Oracle utilities, C, SQL & GUI on UNIX, VAX/VMS, MS DOS & Client/Server envrmnts. Dvlp Data Flows, Prep Relational Diagrms & Physical/Logical models. Perf Reqmt Analysis using CASE methodologies. Perf Process Anlysis & re-engg of systs. Dsgn graphical interfaces. Build applic'n interfaces betwn front-end client applics & back-end server applics. M-F 40hrs/wk. 8a-5p. $47K/yr. Req: BS-Comp Sci/Mgmt Info Systs or reltd field. 2yr exp in job offd. Must hve proof of legal auth to wrk permn'tly in US. Send 2 copies of resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State St-3 South, Chicago, IL 60605, Attn: JAMES GREGORY, Refe V-IL-12764-Z. NO CALLS. AN EMPLOYER PAID AD.

CONTROLS DESIGNER - Design custom control systems for automation of manufacturing, including electrical, hydraulic, pneumatic and water systems. Implement complete hardware and software solution. Write software utilities to automate procedures and enhance productivity. Start up and debug control systems to client facilities. Salary $17.10 per hour, 40 hour week (8:00 a.m. - 5:00 p.m.). Overtime as needed at a rate of $25.65 per hour. Requirements: Bachelor's degree in Systems Engineering, 2 years experience in related occupation as a Software Designer. Experience must include development of software for industrial process control systems. Must also include one course in theory of automatic control, one course in design of automatic control system. Send resumes to MESC, 7310 Woodward Ave., Rm. 415 (Ref #101295) Detroit, MI 48202. Employer paid ad.

Programmer Analyst to design, develop, document, test and maintain programs written in FOCUS, SAS & REXX languages on IBM 3090 with VM/CMS & MVS operating systems; program using COBOL & JCL, and design, develop, document, test and maintain programs for organization, storage and retrieval of information. Reqs: B.S. in Computer Science, Computer Info Systems, Computer Electrical or Electronic Engineering, Systems Analysis or equiv. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occupation in lieu of req. ed. & exp. 2 yrs. exp. in job offered or 2 yrs. related exp. as Programmer Analyst. Related exp. must include designing, developing, testing and maintaining programs on IBM 3090 & using MVS, VM/CMS, FOCUS, REXX, COBOL & JCL. $45,000/yr. 40 hrs./wk. 8a-5p. Send resume at 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #86895 "Employer Paid Ad"

Systems Analyst to conduct systems analysis studies for requirement definitions of software application needs of manufacturing industries; plan & execute projects for migrating manufacturing & business software applications from other RDBMS to ORACLE; manage & execute customization of MRPII based manufacturing software using ORACLE & ORACLE* CASE including on-site implementation & user training. Reqs: B.S. or foreign equiv. in Comp. Info Systems, Comp. Sci. or Mech. Engg. 2 yrs. exp. in job offered or 2 yrs. related exp. such as Sr. Systems Analyst &/or Systems Analyst. Related exp. must include, in whole or part, development of on-line & client/server applications using UNIFY & FOCUS RDBMS; carrying out analysis & design of business applications following CASE methodology using CASE tools in areas of production planning & control, marketing & sales, purchasing, finance & inventory. $3,500/mo. 40 hrs/wk. 9a-6p. Must have proof of legal authority to work permanently in U.S. Send 2 resumes at Illinois Dept. of Employment Security, 401 S. State St., 3 South, Chicago, IL 60605. Attn: Joan Sykilus. Ref. #V-IL13980-S (no calls) "Employer Paid Ad"

Sr. Software Engineer at manage software projects on intricate information systems which support client business by providing system analysis, design & development using UNIX/C, INFORMIX 4GL, POWER BUILDER and Fourgen Case Tools; manage computer consulting projects for clients on site developing required programming which will translate program specifications into system enhancements; participate or lead in project management; develop project goals & schedules; supervise less experienced software engineers; assist CTG sales & management in identifying & securing new to expanded client assignments. Reqs: Bach. in Comp. Sci., Systems Analysis, Comp. Info Systems, Electrical, Electronic or Computer Engg. or equiv. 2 yrs. exp. in job offered or 2 yrs. related exp. such as Sr. Software Consultant or Project Manager. Will accept 3 yrs. college ed. plus 3 yrs. exp. in related occup. in lieu of required ed. & exp. Must have knowledge of system analysis, design & development using UNIX, C & INFORMIX 4GL. $47,000/yr. 40 hrs/wk. 8a-5p. Send resume to Missouri Dept. of Labor, 13131 New Halls Ferry Rd., P.O. Box 339, Florissant, MO 63032. Job #250232

Systems Analyst for Environmental Concern Data Base Organization. Duties include designing and development of new and/or revised computer-based systems and procedures for resource discovery and information staging. Analyze existing procedures and information requirements for computer applications; assess alternative problem solutions and make recommendations. Requires working on GIS, SQL, Pro*C and Oracle Call Interfaces, X-Windows and other client building software. Also C, C++, UNIX, Http, X Libraries and other client/server applications. Requires a Master's degree in Computer Science. Requires one year experience in the job offered or one year experience as a Software Engineer at include the following experience: Design and development of CAD/CAM software in C and X-Libraries. Salary is $39,000.00 per year. Hours are 8:00 am at 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit, MI 48202. Ref #108095. Employer paid ad.

PROGRAMMER/ ANALYST

Grinnell Mutual is seeking an Analyst with 2 - 3 years COBOL programming experience. Preference given to applicants with IBM AS/400 background. Property/Casualty experience and knowledge of SDS software a definite plus. Qualified candidates should send resume and salary expectations to: **Grinnell Mutual, c/o Human Resources, 4211 and Highway 146, Grinnell, Iowa 50112**

ENGINEER SOFTWARE. Port RDBMS products to various platforms; analyze problems & provide fixes on product source code & QA test suites; define & apply configuration mgmt & version control procedures; design & test exhaustive test suites for database servers & tools; & apply & evolve stds for porting, sys testing & QA. BS or foreign equiv. in CS, CE, Phy Sci or Math + 2 yrs. in job ofrd or as a S/W Eng or Prgmr/Analyst. Will accept 2 yrs of grad study in CS in lieu of 2 yrs exp. Course-work, projects or exp in dev & debugging C programs in multi-processor envrmnt, UNIX, UNIX internals & UNIX dev utilities like make, yacc, lex, sdb, adb, awk, sed, SCCS, prof, shell script prgmng, network prgmng using sockets & TCP/IP, X-Windows & MOTIF GUI envrmnts, SQL & RDBMS client server archt, COBOL & FORTRAN reqd. $3428.42/mo. 40 hr/wk. Job site/intrv: Lenexa, KS. Please apply with a resume in person to your local Kansas Job Service to send resume to Dept. of Human Resources, KS791485, Attn: Don Bruner, 401 S.W. Topeka Blvd, Topeka, KS 66603-3182. Applicants must have proof of legal authority at work in the U.S.

Programmer Analyst at develop manufacturing application in ORACLE environment; code various user-exit programs using PRO*C & PL/SQL; develop user interface screens in SQL*Forms & to support these screens, write different stored procedures & database triggers in PL/SQL; write user friendly reports for application users in SQL*Report Writer using SQL*Loader to download data from system flat files to ORACLE database tables; & write different shell script programs in awk/sed to automate this process in HP/UNIX & SEQUENT/D413 environment. Reqs: B.S. in Computer Science, Systems Analysis, Computer Information Systems, Computer Electrical or Electronic Engineering, Mathematics or its equivalent in education and exp. Will accept 3-yrs. college education plus 3 yrs. exp. in the job offered or in related occupation in lieu of required education & exp. 1 yr. exp. in job offered or 1 yr. related exp. as Programmer Analyst, Programmer, Systems Analyst or Consultant. Must have some related exp. developing manufacturing application software & using each of the following: ORACLE 7.0, PRO*C, PL/SQL, SQL*Forms, SQL*Reportwriter, SQL*Loader, awk, sed & HP-UNIX. $45,000/yr. 40 hrs/wk. 8a-5p. Send resume at 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #94795 "Employer Paid Ad"

Programmer Analyst to analyze, design, develop, test and implement enhancements to Common Quality Indicator System on IBM 3090 under MVS/ESA using IMS DB/DC, DB2, COBOL II, Application Development Workbench, Microfocus Work Bench for COBOL II and XPEDITOR. Reqs: Bachelor degree in Computer Science, Systems Analysis, Computer Information Systems, Computer Electrical or Electronic Engineering, Mathematics to equiv in ed & exp. Will accept 3 yrs. college ed plus 3 yrs. exp. in job offered to related occupation in lieu of required ed & exp. 2 yrs. in job exp. offered to 2 yrs. exp. as a Systems Analyst/Programmer, Programmer Analyst, Systems Analyst or Consultant. Must have some related exp. in system design, development and implementation and using each of the following: IBM 3090, MVS/ESA, COBOL II, ADW, XPEDITOR, DB2 and IMS DB/DC. $49,000/yr. 40 hrs/wk. 8a-5p. Send resume to 7310 Woodward Ave., Room 418, Detroit, MI 48202. Ref #85495 "Employer Paid Ad"

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Database Analyst. Programs, tests, codes, analyzes, designs and develops a commercial advertising software system using Sybase, Visual Basic, Prolog, and C in a UNIX and PC platforms. Will develop system using Graphic User Interface design, including Visual Basic and Natural Language analysis to insure that software programs will be able to phrase and translate advertising text to allow searching of vast informational database system to determine effectiveness of ads using universal product codes as a form of data acquisition and analysis. Requires Master's degree in Computer Science. Also requires six months experience in the job to be performed or six months experience as a Research Associate. Education to include completion of a Master's thesis or six months as a Research Assistant in which the individual designed and implemented a database system using Sybase and implementation of a Graphic User Interface. Education to include completion of a project in the design and implementation of a Natural Language processing system in either an Artificial Intelligence or object-oriented environment. If experience in related field, entire experience must be in the design of data structures for a machine translation system using Prolog or Sybase for Artificial Intelligence and Natural Language processing. Hours: 8:00 a.m. - 5:00 p.m. 40 hours per week at $45,000 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume to: Illinois Department of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605. ATTN: Lela Jackson. Ref. #V-IL 12985-J. No Calls. An Employer Paid Ad.

Software Engineer: Analyze, design, program and test software systems for new generation of mobile computers. Use Assembly language to develop DOS, Windows and Windows 95 hardware device drivers for mouse, pen, digitizer and video display. Use C and C++ to develop system software for DOS and Windows. Design and program Graphics User Interface. Develop special LAN driver for a single IPX stack to support two adapters concurrently. Use wireless communication knowledge and asynchronous communication knowledge to develop remote control software package with special pen injector to support remote pen input. Evaluate and test system software over wired LAN, radio and modem connections. 40 hrs/wk, 8:00 a.m. - 5:00 p.m. $45,500/yr. Must have 6 years of college and a M.S. in Computer Science. Must have 1 year experience in job offered or as Graduate Teaching Assistant/Mathematics. Education must include 2 courses in System Design & Analysis, 1 course in Assembly Language, 1 course in Data Structures, 1 course in Local Area Networks (LAN), 1 course in Systems Programming & 1 course in Parallel Processing. Experience must include application of protected mode Assembly Language, program design of Graphics User Interface in DOS network & communication technology & Windows application development. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume to: Illinois Department of Employment Security, 401 S. State Street-3 South, Chicago, Illinois 60605. Attention: James Gregory. Reference # V-IL-12784-Z. No calls. An employer paid ad.

Advisory Consultant to analyze complex system requirements to develop entire life cycle of Work Management System on UNIX platform; design & develop system using ORACLE CDE tools (ORACLE FORMS 4.0, PL/SQL 2.0), create menus using SQL*MENU, generate reports using ORACLE REPORTS 2.0, SQL*PLUS 3.1, PRO*C 1.5, insert data from flat files into tables using SQL*LOADER; test, implement & tune applications converting applications from PC to Macintosh O.S. & upgrading all applications from Forms 4.0.12 at Forms 4.0.13 and Reports 2.0.13 to 2.0.14. Reqs: Bach. or foreign equiv. to Comp. Sci. Or Engg., 2 yrs. exp. in job offered or 2 yrs. related exp. such as Programmer Analyst. Related exp. must include database design, development, testing, implementing, application tuning, database tuning in client server environment on UNIX & VAX/VMS platforms & must have exp. in ORACLE tools. $52,000/yr. 40 hrs/wk. 8a-5p. Send resume to 7310 Woodward Ave., Room 418, Detroit, MI 48202. Ref. #112195 "Employer Paid Ad"

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Application materials are available at the Citizens Service Center, fourth floor, 1313 Main, PO Box 1995, Vancouver, WA 98668-1995, or by calling (206) 696-8143. Completed application, resume, and supplemental questionnaire materials must be **RECEIVED** at the Citizen Service Center, Attn: HRRS by 5 p.m. Friday, July 21, 1995.

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WANTED - SOFTWARE ENGINEER (Ref 28295) to plan, develop, test and document computer programs; apply knowledge of programming techniques and computer systems. Consult with user to identify current operation procedures, evaluate user requests and clarify program objectives. Read manuals, periodicals and technical reports to learn ways to develop programs that meet user requirements. Responsible for maintenance and creation of a Database and for inventory management within an automotive framework. Responsible for Quality Analysis System and identification of mechanical parts and evaluation from an engineering perspective for methodology. Responsible for designing and programming business solutions for Quality Analysis System using rapid applications development tools and techniques. Reqs: M.B. in M.E. and 6 months as a Database Programmer. Will accept an M.S. in C.E., C.S., Systems Analysis to equiv. Will accept exp. as Prog. Sys. Anal., Mech. Engr. to Consultant. Must have one graduate computer course in Advanced Mechanics Materials and must include experience in whole or part in maintaining a database. $47,000/yr. 40hrs/wk. 8-4p m. Send returns at 7310 Woodward Ave., Rm 415, Detroit, MI 48202 and include Ref#. Emp. Paid Ad.

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Consolidated Communications Directories

Programmer Analyst to define & analyze client's electronic data processing needs to determine exact nature of the problem & develop solutions to meet the customer's unique EDP requirements; design & develop software database management systems; develop network & interface systems, graphics & computer imaging; analyze data; undertake statistical & mathematical models; design computer architecture & file structures; revamp operating systems & software utilizing UNIX, oracle, SQL tools & PRO*COBOL. Reqs: B.S. in Comp. Sci., Comp. Info. Sys., Systems Analysis, Mathematics, Computer Electronic or Electrical Engg. to its equivalent. 2 yrs. exp. in job offered or 2 yrs. related exp. such as Sr. Programmer Analyst, Sr. Systems Analyst, Systems Engineer, Software Engineer, Consultant, Programmer or Programmer Analyst. Will accept 3 yrs. college ed. plus 3 yrs. related exp. in lieu of req'd ed. & exp. Related exp. must include in whole or part design & development using Oracle, SQL*PLUS, SQL*FORMS & PRO*COBOL. $42,000/yr. 40 hrs/wk. 8a-5P. Must have proof of legal authority to work permanently in U.S. Send 2 resumes at Illinois Dept. Of Employment Security, 401 S. State St., 3 South, Chicago, IL 60605. Attn: Ruth Daniels. Ref #V-IL 12947-R (no calls) "Employer Paid Ad"

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SOFTWARE QA ENGINEERS
SOFTWARE PROJECT MANAGERS

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- 3+ years' professional experience developing business application software in a team environment
- Thorough familiarity with all phases of the Software Development Life Cycle (SDLC)
- Applied knowledge of analysis and design methodologies coupled with strong practical design experience
- Experience in 'C', RDBMS (ORACLE preferred), SQL and UNIX for server-based application software development positions is required.
- Experience in MS-Windows SDK, PowerBuilder, 'C', RDBMS/SQL for front-end application software develop ment positions. Those with strong PowerBuilder back ground will be given priority.
- Some positions require 40%-50% travel to consultwork on projects within our European offices.

In addition our QA positions require the following expertise:

- Writing/executing test plans and test cases and writing functional specifications
- Implementing automated test tools
- Strong Quality Assurance Principals
- ISO9000, SEI or TQM

In return for your contributions to our continued success, we offer an excellent compensation package and benefits plan. To learn more about the advantages of moving into the future with Dendrite send or fax your resume, indicating position of interest, to **Human Resources Department, Dendrite International Inc., 1200 Mt. Kemble Avenue, Morristown, NJ 07960-6797; FAX (201) 425-2195**
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Computer Sciences Corporation is a world leader in the science of information technology and its application to achieve clients' business objectives. Serving a wide range of industries, CSC provides comprehensive services in management consulting, systems integration, technology and customer consulting.

At CSC, we have the talent to deliver results consistently, no matter what the challenge. Our clients depend on that talent and on our unique ability to make technology work for business. You'll find that ability behind our worldwide success, which demonstrates that taking the lead is infinitely more rewarding than following. If you share our high standards of achievement, and have a willingness to travel, explore a career at one of the most advanced and dynamic consulting organizations imaginable. With our dramatic growth and steady flow of new projects from Fortune 1000 clients, you can begin a challenging career with CSC.

Work with a variety of clients and industries utilizing client server development tools. You will transform business requirements into productive systems in fast-paced, rapid application development environments. We require 2+ years' full life cycle development with C, UNIX and SQL based RDBMS's (ORACLE, SYBASE, INGRES); LAN/WAN working experience with PowerBuilder, C++; and/or Windows NT considered a plus.

We offer a salary commensurate with your expertise, comprehensive benefits and all of the challenge you'd expect from a world-class leader. Please send your resume to **CSC, 300 Executive Drive, Suite 300, West Orange, NJ 07052, Attn: Scott W. Stahlmann, Recruitment Manager, FAX: (201) 243-7540.**
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CSC

Software Engineers

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If you are interested in joining an award-winning staff with the ambition, creativity, and discipline required to meet the challenges of the industry's changing needs, please call or forward your resume to:

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TRANSPORTATION SYSTEMS

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Intermediate and senior applicants only. Design and develop software/firmware to integrate device drivers, I/O hardware for real-time PC based systems (49% and up). Real-time experience and software documentation is required. C Executive and TCP/IP is a plus.

Programmers

Intermediate & senior applicants only. Software development with C, UNIX, & SQL. Must be familiar with object oriented design methodology. Exper with PowerBuilder C++ Informix, TCP/IP Windows, ODBCs, & client server is a plus.

Sr. Database Administrator

Informix DBA with exper. in both Standard & On Line engines, I STAR, ESQL/C I 4GL, I-NET and other Informix products. Exper. in logical & physical database modeling as well as organization techniques is required.

Project Managers

The ideal candidates will have prior project management experience developing large software systems. Must have a demonstrated track record of managing a technical group: resource planning, project scheduling & budgeting, & excellent interpersonal skills. Experience with full life cycle development & implementation. Required skills are UNIX, C, RDBMS, 4GL/GUI tools, Microsoft Project or equivalent software.

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Provide technical & administrative management of local area network hardware & software for multi platform configurations & office administration. Duties include installing, maintaining & upgrading various types of computers (DEC Alpha, AXP, PCs) as well as the network(s). Requires a strong background in UNIX system administration (building kernels, tuning) SCSI devices (hard drives, CD-ROM tape drive, etc.) backup/restore dumps/recover, modems, TCP/IP network administration, NFS, remote terminal service, network printer servers and knowledge of several communication protocols.

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Piscataway, NJ 08854
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DEVON CONSULTING

SENIOR PROGRAMMER ANALYST

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Requirements: 3-5 years experience and a Bachelor's Degree in Computer Science or Related Field. Relational Database and Graphical User Interface experience along with excellent communication skills. Knowledge of Sybase and Powerbuilder Tools is preferred. 20% travel required.

Union Camp

Interested candidates should forward their resume to: Fiona T. Morgan, Personnel Administrator, Union Camp Corporation, 1600 Valley Road, Wayne, NJ 07470 (201) 628-2298. Equal Opportunity Employer

Claremont Technology Group, Inc., a global management and consulting firm, is a recognized leader in providing information technology (IT) services to its clients. We are seeking experienced professionals who are skilled in today's technology that have the following qualifications: technical expertise, industry and/or functional specialization, ability to understand and provide excellent client service, system development experience (analysis/design/programming), excellent written and verbal communication skills and ability to assist in new business/proposal development. The energies of our professional consultants are focused on large scale, mission-critical projects with organizations in the retirement, public utility, investment management, communications, retail and environmental industries.

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claremont Technology Group, Inc.

Claremont Technology Group, Inc.
180 Mount Airy Road, Suite 101
Basking Ridge, NJ 07920
Attn: Donna Nevins
Fax: 908-204-0973
Donna_Nevins@ctgrmnt.com

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If you have any or all of the above mentioned skills and have a Retail, Direct Mail, Financial Sales and Marketing or a Manufacturing background, send resume to: **Dept. CW, LENOX, INC., 100 Lenox Drive, Lawrenceville, NJ 08648. FAX: (609)844-1554**
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SOFTWARE SYSTEM TESTER

Minimum of 2 or more years software system test experience. Thorough knowledge of MS-Windows and/or UNIX GUI. Experience with Oracle, Sybase or Informix a plus, as well as data modeling or process modeling experience. Position will involve test plan preparation, test case generation, detailed product testing and the writing of automated test scripts using the QA Partner testing tool. All responses should be directed to: QA Manager.

QA PARTNER TOOL SPECIALIST

Two or more years software system test experience. Strong knowledge of MS-Windows and/or UNIX GUI. At least one year of experience developing automated scripts using the QA Partner Testing Tool. Other helpful skills include Oracle, Sybase or Informix experience, as well as data modeling or process modeling experience. Position will involve design, development and maintenance of QA Partner scripts in our cross-platform testing environment. All responses should be directed to: QA Manager.

SOFTWARE CURRICULUM DEVELOPER

Minimum of 3 years experience in structured Curriculum Development. Exposure to data/process modeling. Extensive experience with Microsoft Office tools. PowerPoint an absolute requirement. Exposure to Oracle, Sybase or DB2 a big plus. Position will involve development of training materials for "Instructor Led" courses. All responses should be directed to: Training Manager.

TECHNICAL WRITER

Minimum of 2 years experience writing documentation for DOS and/or Windows software. Strong knowledge of Windows and Microsoft Word for Windows is required. Knowledge of relational database design, SQL, data modeling, object-orientated design and/or Windows on-line help development is a plus. All responses should be directed to: Documentation Manager.

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Must have at least 1 or more years industry experience with a major client/server database such as Oracle, Sybase, or MS SQL, be familiar with relational database terminology and SQL along with strong experience with Microsoft Windows and Windows for Workgroups (Windows NT desirable). Trouble shooting skills, ability to handle multiple tasks and heavy telephone experience in a help desk setting required. Experience with UNIX or Visual Basic is desirable. All responses should be directed to: Manager of Technical Support.

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PROGRAMMER/ ANALYST

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PROGRAMMER/ANALYSTS

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Jeanne Coverl, Employment Manager

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727 North Beers Street
Holmdel, New Jersey 07733
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KnowledgeSource

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New York City and Glastonbury, CT

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Micro Focus offers an attractive salary and bonus plan along with outstanding benefits including stock options, profit sharing and 401(k). For immediate consideration, please forward your resume to our corporate headquarters: **Micro Focus, Attn: Professional Staffing, 2465 E. Bayshore Rd., Palo Alto, CA 94303**. FAX (415) 496-7248. E-mail: jobs@mfltd.co.uk
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MICRO FOCUS

CSX TECHNOLOGY

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DIRECTOR DATA CENTER - Responsible for the overall management and operations of a large 7 x 24 data center which has over 1200 mainframe mips, plus the management of a large complex network with multiple protocols, platforms, and distributed systems. The data center is a state-of-the-art facility supporting a world wide user base. This includes on-line and batch operations on mainframe and midrange systems. This position requires the Director to exercise overall managerial direction, assures adherence to standards and to develop procedures designed to provide secure, efficient and quality operation of a data center.

DIRECTOR DISTRIBUTED PROCESSING - Responsible for supporting existing distributed processing and Client/Server applications and for the development of the company's future such applications. Manage development projects with plans to migrate existing systems running on a wide variety of platforms to a largely MVS and OS/2 environment.

DIRECTOR TELECOMMUNICATIONS - Responsible for defining telecommunications architectures and technologies required to provide voice, data, radio, and image communications in support of corporate business requirements and process reengineering strategic plans. Provides business solutions by integrating communications technologies with applications development. Provides management of a major telecommunications vendor to achieve project engineering and deployment schedules required to meet corporate needs.

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Enterprise Network Manager

Applications are being accepted for an enterprise network manager for the College's new campus-wide network. Responsibilities include day to day operations and management of network operating systems, applications, WAN resources, network backup and security, and user accounts, as well as some hardware support. A Netware 4.1 enterprise network with NDS is being installed on a complete new cable plant based upon ethernet and ATM protocols. Approximately 350 DOS, Windows and OS/2 clients, along with several Macs will be on the network, as will VAXes for administrative and library applications, and Unix systems to support academic applications, network management and Internet access. 1800 users will have e-mail and Internet access from desktops and public labs by Fall 1995.

Requirements include: bachelor's degree, recent experience installing and managing multi-platform microcomputer networks using Netware, experience providing WAN/Internet access, network security, and staff resources. Work experience in educational environments and Novell Netware Engineer certification (such as CNE, ECNE) are highly desirable. Communication skills, patience, and the ability to work with many kinds of people are crucial. The successful candidate will be required to live close to campus and work outside of normal business hours when necessary to minimize interruptions in network services.

Westminster College is a small, private liberal arts college located in a small community 60 miles north of Pittsburgh and 20 miles east of Youngstown, Ohio.

Please submit a cover letter, resume, and the names and telephone numbers of three professional references, along with salary requirements, to the following address by July 7, 1995. Expected start date for the position is no later than September 1, 1995. Enterprise Network Manager Position, Computer Center, Hoyt Science Resources Center, Westminster College, New Wilmington, PA 16172. Westminster College is an Affirmative Action, Equal Opportunity Employer.

chief information officer

A.T. Massey Coal Company, Inc., is seeking chief information officer. With 13 mining complexes located throughout Central Appalachia, Massey Coal is the sixth largest coal company in the United States.

Qualified candidate must have:
- Bachelor's degree in computer science or equivalent academic background
- Master's degree in business administration or strong accounting background (CPA)
- Experience (5 years or more) as manager of corporate data processing or systems design
- Some experience in telecommunications
- Experience (3 years or more) as a line manager
- Technical experience with
  - IBM AS400 hardware and related software applications
  - Novell-based local area networks, Lotus Suite, PC hardware, and PC software applications
  - Systems design, coding, and installation of internally developed AS400/mainframe programs or equivalent mid-range systems
  - All areas of systems testing, including functionality, reliability, and user friendliness.

Candidate should be pragmatic, entrepreneurial, a team player, effective in a matrix environment, and a hands-on leader.

The CIO will work closely with the Chief Executive Officer and will be a member of Massey Coal's senior management team. Although headquartered in Richmond, VA, the CIO will travel extensively to mining operations throughout Central Appalachia. Prefer candidate who has spent significant time living or working in Central Appalachia.

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Please respond in confidence to: CIO Search Committee, A.T. Massey Coal Company, Inc., P.O. Box 26765, Richmond, VA 23261

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The Vancouver Clark County Joint Office of Information Technology (JO) has an immediate need to fill the newly-created position of Assistant Director. Working under the general supervision of the JO Director, the individual in this position will be responsible for advising, assisting, and representing the Director in the management of the JO, planning, developing, and ensuring the effective delivery of Information Systems (IS) services to customer departments and performing a full range of managerial functions, including personnel management, budget and financial management, and the direct management of one or more major technical unit(s) of the JO. The JO is a governmental organization providing comprehensive IS services to City and County departments. IS background required. Public Sector experience is desirable.

Application materials are available at the Citizens Service Center, fourth floor, 1313 Main, PO Box 1995, Vancouver, WA 98668-1995, or by calling (206) 696-8143. Completed application, resume and supplemental questionnaire materials must be **RECEIVED** at the Citizen Service Center. Attn: HRRS by 5 p.m. Friday, July 21, 1995.

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We are seeking an Analyst with strong planning and network design skills, to include knowledge of WAN technologies, in order to implement LANs within the overall corporate network infrastructure. In-depth experience with Novell Netware 3.X required; Microsoft Windows NT Server experience highly preferred. Must have ability to manage multiple projects spanning across multiple departments. A degree in Computer Science or related field is desired. **Reference #SGS-0001**

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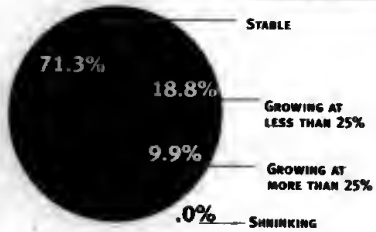

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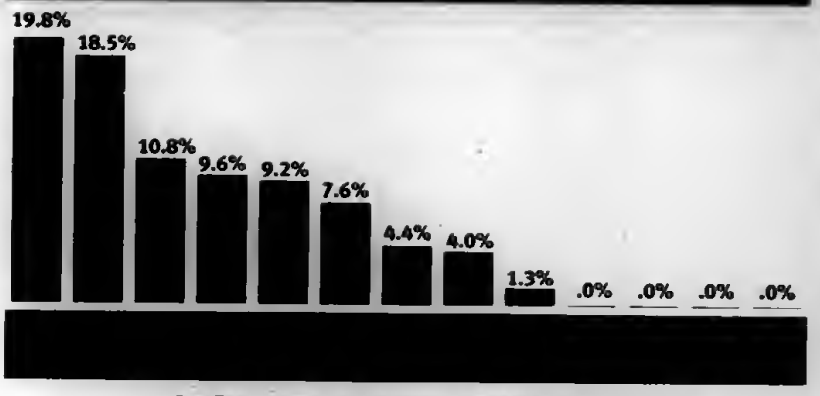
REGIONAL GROWTH ANALYSIS



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Market Pulse

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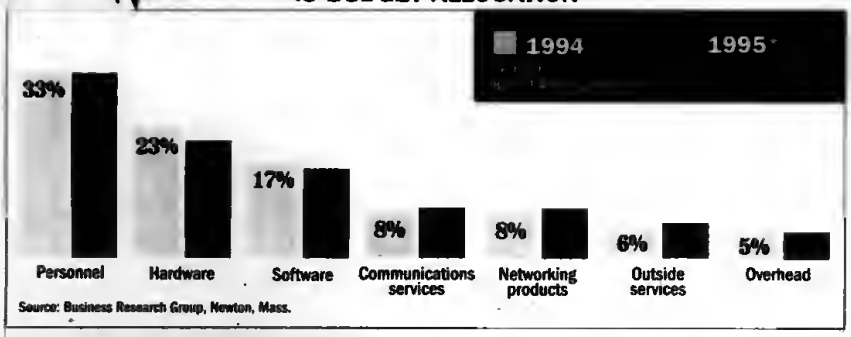
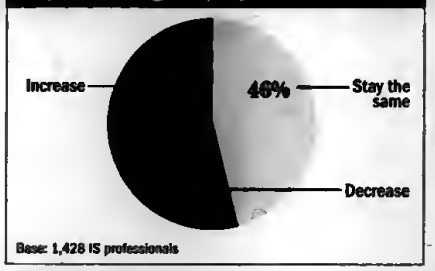


Source: Business Research Group, Newton, Mass.

HEAD COUNT LEVELS

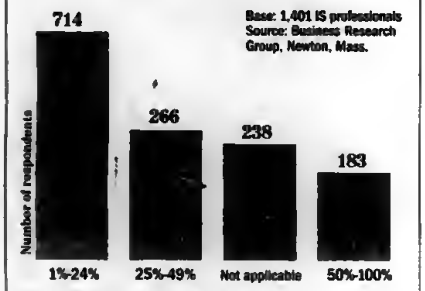
Estimated change in IS/data processing employees for 1995



Base: 1,428 IS professionals

CLIENT/SERVER DEMANDS

Respondents spend roughly 25 of their IS budgets to implement and maintain client/server systems



Base: 1,401 IS professionals
Source: Business Research Group, Newton, Mass.

Percentage of IS budgets spent to implement and maintain client/server applications and technologies

SOFTWARE SNAPSHOTS*

Within their realm of buying power, respondents to a *Computerworld* survey will spend the following in the designated categories during the next 12 months

*Includes surveys received between Jan. 1 and May 31, 1995
Source: CW Database Division, Buyers Database, Framingham, Mass.

	Average spending workstation/PC/LAN	Average spending mainframe/midrange
Client/server development tools	$40,310 Base: 2,269 IS professionals	$71,564 Base: 935 IS professionals
Network management software	$26,045 Base: 3,566 IS professionals	$42,382 Base: 1,042 IS professionals
Electronic mail	$29,552 Base: 4,042 IS professionals	$35,465 Base: 1,118 IS professionals
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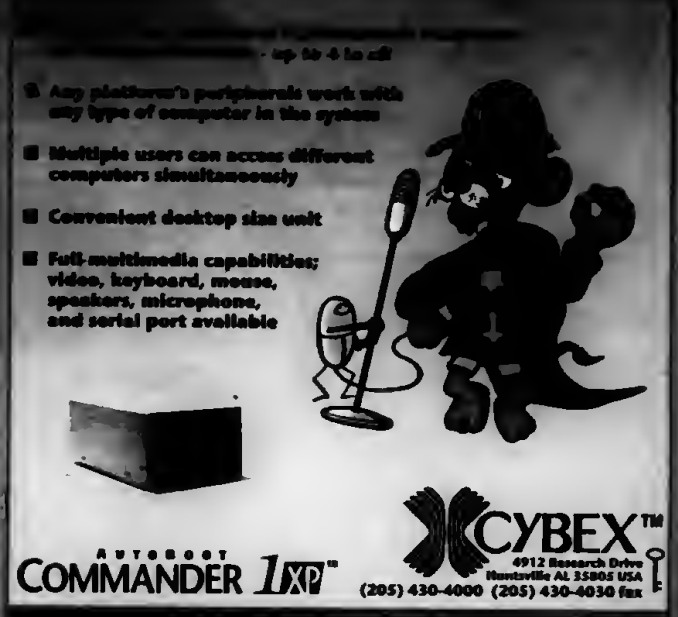

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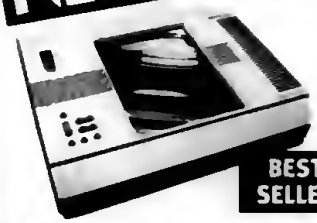

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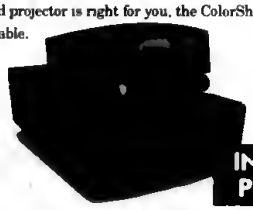

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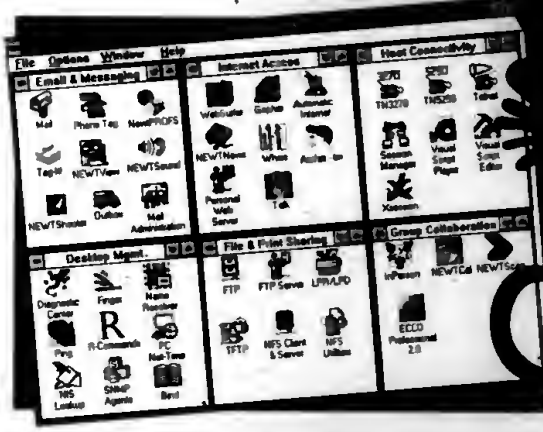

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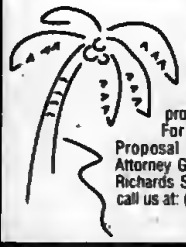

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Gainers / Losers

Percent

Gainers	%	Losers	%
Bolt, Beranek & Newman (H)	54.5	Telebit Corp.	-43.1
Microcom Inc. (H)	31.3	Retix	-21.1
Micrografx Inc.	22.8	Cray Computer	-16.7
Cambex Corp (H)	22.1	Meridian Data Inc.	-13.0
Computer Task Group	20.7	Software Publishing Corp.	-12.5
Chips and Technologies (H)	20.5	Bachman Info. Systems (H)	-12.3
Gateway 2000 Inc	20.3	Struct. Dynamics Research	-11.4
FORE Systems Inc.	20.2	TriCord Systems (L)	-11.1

Dollar

Gainers	$	Losers	$
Texas Instruments (H)	10.50	Digital Equipment Corp.	-3.50
Bolt, Beranek & Newman (H)	9.88	Telebit Corp	-3.13
Dell Computer Corp. (H)	9.38	System Software Assoc.	-2.06
Micron Technology (H)	8.00	Platinum Technology	-1.75
Atmel Corp (H)	7.25	Struct. Dynamics Research	-1.56
Intel Corp (H)	7.63	Cambridge Tech. Partners	-1.38
Ascend Communications (H)	7.00	VMark Software Inc.	-1.31
Cirrus Logic (H)	6.88	Legent Corp.	-1.00

Thanks to a reseller agreement that lets AT&T Corp. sell Bolt Beranek and Newman, Inc.'s (BBN) Internet access service, BBN's shares shot up 6 point last week. BBN is guaranteed $130 million from the deal over the next three years.

[redacted]

IPO's celebrate first year

What a difference a year makes for some of the initial public offerings (IPO) issued in the second quarter of last year. The technology stock slump rebounded since then, and now techoology drives the market on many occasions. For example, issues of **Fore Systems, Inc. (FORE)** in Warrendale, Pa., have nearly doubled (see chart) since its IPO date.

Fore, a manufacturer of Asynchronous Transfer Mode (ATM) networking software and adapters, benefited from entering the ATM fray early, according to Noel Lindsay, an analyst at Hambrecht & Quist, Inc. in San Francisco. It is still ahead of everyone else in the market, including giants **Cisco Systems, Inc. (CSCO)** and **Bay Networks, Inc. (BNET)**, he said. Fore's agility and focus will probably enable it to continue to be a leader in this area in the near term, Lindsay said.

Along with booming network vendor **Ascend Communications, Inc. (ASND)**, **Atria Software, Inc. (ATSW)**, an application development software maker in Natick, Mass., led the group of IPOs with a huge increase in stock price (see chart). "It is a great little company" doing highly differentiated software configuration management, according to Bill Shattuck, an analyst at Alex. Brown & Sons, Inc. in San Francisco. *— Stewart Deck and Tim Ouellette*

Where are they now?

1994's second-quarter IPOs faced tough market conditions last year. Some have fared well, while others are stuck in low gear.

Company	IPO price	Price 6/22
Ascend Communications	13	50¼
Atria Software	12	49¾
C-Cube Microsystems	15	26¼
Dialogic	11	20⅛
Fore Systems	16	32½
Geoworks	6	8¾
Micro Technology	9	8
Network Peripherals	6	21⅞
Wandel & Goltermann	11	10⅝
XcelleNet	11	22¾

June 23 Stock Ticker

Exch	52 Week Range High	52 Week Range Low	Company	June 23 Price	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 4.72%**
OTC	59.25	22.00	3COM Corp	67.13	5.25	8.5
NYS	44.88	37.88	Ameritech Corp	46.13	0.25	0.5
NYS	55.88	47.23	AT&T	33.13	3.25	3.6
OTC	31.75	5.61	Ascend Communications (H)	31.75	7.00	15.6
OTC	19.75	11.88	Banyan Systems Inc	14.00	1.00	7.7
OTC	61.50	18.41	Bay Networks Inc (H)	40.75	0.50	1.2
NYS	58.38	48.38	Bell Atlantic Corp.	58.38	1.88	3.3
NYS	64.25	50.50	BellSouth Corp (H)	61.50	0.00	0.0
NYS	30.00	10.00	Bolt, Beranek & Newman (H)	28.00	9.88	54.5
OTC	18.75	9.00	Brooktrout Technology	14.00	0.25	1.6
NYS	56.50	25.00	Cabletron Systems	53.63	1.63	3.1
OTC	22.75	10.88	Centigram Communications	15.13	1.38	10.0
OTC	50.50	20.00	Chipcom Corp	26.13	2.63	11.2
OTC	31.25	18.75	Cisco Systems Inc. (H)	31.75	1.63	5.4
OTC	13.00	6.13	Compression Labs Inc	6.38	-0.38	6.3
OTC	11.75	5.13	Computer Network Tech. (H)	11.63	0.75	6.8
OTC	14.50	7.50	CrossComm	11.88	0.14	1.3
OTC	4.38	2.13	Data Switch Corp	4.38	0.16	3.7
OTC	46.25	16.13	DSC Communications (H)	46.75	3.38	7.8
OTC	41.75	17.63	FORE Systems Inc	32.75	5.50	20.2
NYS	35.00	9.25	General DataComm Inds.	13.25	1.50	12.8
NYS	34.88	29.50	GTE Corp	33.63	0.00	0.0
NYS	119.13	77.00	ITT Corp. (H)	110.63	1.00	0.9
OTC	33.88	17.25	MCI Communications Corp	20.25	0.50	2.9
OTC	15.75	5.50	MICOM Communications Corp	6.75	0.25	3.8
OTC	16.75	5.88	Microcom Inc. (H)	16.63	4.00	31.7
OTC	10.50	4.00	Netrix Corp	7.25	0.12	1.8
OTC	9.75	3.25	Network Computing Devices (H)	9.25	1.50	19.4
NYS	27.88	8.25	Network Equipment Tech.	21.88	2.13	9.8
OTC	30.63	16.23	Network General	26.75	3.94	12.3
NYS	63.25	26.50	Newbridge Networks Corp	38.75	-0.38	1.0
NYS	41.00	27.63	Northern Telecom Ltd	38.38	0.38	1.0
OTC	23.75	13.38	Novell Inc.	20.75	0.38	1.9
NYS	43.13	35.38	Nynex Corp	42.13	0.50	0.8
OTC	75.38	35.50	Octel Communications Corp (H)	37.88	1.00	3.5
OTC	37.00	6.00	Optical Data Systems Inc (H)	37.00	4.75	18.7
OTC	6.00	2.13	Penril DataComm Networks	5.38	0.00	0.0
OTC	50.13	31.75	PictureTel Corp	48.88	0.50	1.1
OTC	8.13	2.13	Proteon Inc.	5.63	-0.38	6.0
OTC	7.25	2.75	Racotek Inc.	5.50	0.11	2.2
OTC	6.75	3.50	Retix	3.75	1.00	21.1
NYS	34.88	16.31	Scientific Atlanta Inc	22.25	2.13	10.6
NYS	42.50	39.25	Southwestern Bell Corp (H)	47.13	0.75	1.6
NYS	40.13	25.88	Sprint Corp	50.50	-0.18	1.1
OTC	31.03	12.50	Standard Microsystems Corp.	15.00	0.00	0.0
OTC	50.25	10.00	Stratacom Inc. (H)	50.13	1.88	3.9
OTC	8.13	3.88	Telebit Corp	4.13	3.13	-41.1
OTC	113.75	25.06	US Robotics (H)	106.75	0.00	0.0
NYS	43.12	34.62	US West Inc.	41.63	0.38	0.9
OTC	23.50	10.75	Xircom	10.88	-0.75	6.5
OTC	75.00	6.00	Xylogics Inc (H)	27.00	0.50	1.9
PCs and Workstations						**UP 6.43%**
OTC	6.00	3.50	Advanced Logic Research (H)	6.63	0.13	1.9
OTC	50.94	24.63	Apple Computer Inc (H)	48.00	4.23	9.7
OTC	19.25	10.38	AST Research Inc.	17.63	0.13	0.7
NYS	45.50	29.50	Compaq Computer Corp (H)	44.88	5.00	12.5
OTC	59.25	21.50	Dell Computer Corp (H)	59.75	9.38	16.6
OTC	25.25	10.75	Gateway 2000 Inc.	23.75	4.00	20.3
NYS	77.13	35.94	Hewlett-Packard Co. (H)	76.38	1.38	1.8
OTC	16.38	2.38	Micron International Inc. (H)	18.13	2.88	18.9
NYS	42.00	21.13	Silicon Graphics (H)	41.75	1.38	3.4
OTC	50.63	18.25	Sun Microsystems Inc (H)	50.38	0.88	1.8
NYS	53.00	33.38	Tandy Corp (H)	52.50	3.38	6.9
Large Systems						**OFF [illegible]**
ASE	11.63	5.25	Amdahl Corp	11.63	0.13	1.1
NYS	8.88	3.63	Convex Computer	4.62	0.13	2.8
OTC	0.33	0.16	Cray Computer	0.16	-0.03	-16.7
NYS	26.00	14.63	Cray Research Inc. (H)	25.25	2.25	9.8
NYS	12.00	6.75	Data General Corp	10.75	0.38	3.8
NYS	69.50	16.38	Digital Equipment Corp	47.38	3.50	7.8
OTC	3.56	1.00	Encore Computer Corp	1.50	0.25	19.0
OTC	16.50	6.50	Harris Computer Systems Cor	14.00	0.00	0.0
NYS	99.00	54.50	IBM (H)	99.00	5.88	6.3
OTC	7.88	3.00	Meridian Data Inc.	5.00	-0.73	13.0
OTC	17.25	4.75	NetFrame	5.11	-0.19	3.4
OTC	21.25	11.75	Sequent Computer Sys	18.75	0.88	4.8
OTC	5.88	3.13	Sequoia Systems Inc.	4.19	-0.75	-3.0
NYS	39.88	25.75	Stratus Computer Inc.	31.63	0.38	1.2
NYS	18.75	11.13	Tandem Computers Inc	16.88	0.25	1.5
OTC	13.63	3.75	TriCord Systems (L)	4.00	0.50	-11.1
NYS	12.12	8.25	Unisys Corp	11.13	0.50	6.7
Software						**UP [illegible]**
OTC	65.13	25.25	Adobe Systems Inc (H)	61.00	1.50	2.5
OTC	5.88	3.50	American Software Inc.	4.63	-0.50	-9.8
OTC	30.75	9.50	Applix Inc	22.88	0.25	1.1
OTC	44.75	23.75	Autodesk Inc. (H)	44.75	1.06	3.4
OTC	7.38	1.75	Bachman Info. Systems (H)	6.23	-0.88	12.3
OTC	32.00	22.00	BGS Systems Inc.	31.50	0.25	0.8
OTC	80.00	40.75	BMC Software Inc. (H)	80.00	3.50	4.6
OTC	31.25	16.50	Boole & Babbage	30.00	-1.00	3.2
OTC	14.38	6.00	Borland Int'l Inc.	12.88	-0.50	-3.7
OTC	19.75	5.75	Brock Control Systems Inc.	6.38	0.88	11.7
OTC	3.75	1.78	CE Software	2.63	-0.18	-6.3
ASE	18.88	7.50	Cheyenne Software Inc (H)	18.88	3.00	11.2
OTC	29.25	9.75	Cognos Inc. (H)	29.75	1.75	6.3
NYS	73.63	37.50	Computer Associates	70.13	0.50	0.7
NYS	6.50	2.50	Computervision Corp	5.75	0.50	7.0
OTC	49.25	21.88	Compuware Corp	33.75	0.13	0.4
OTC	20.23	9.00	Comshare Inc.	19.75	0.75	3.9
OTC	18.25	10.13	Corel Corp (H)	17.00	1.38	8.8
OTC	16.25	7.25	Dataware Technologies Inc.	13.73	-0.52	3.6
OTC	6.00	1.88	Easel Corp	3.94	0.00	0.0
OTC	40.00	16.25	FileNet Corp. (H)	38.88	0.38	0.9
OTC	8.75	3.00	4th Dimension	4.50	-0.38	3.7
OTC	30.06	8.50	Frame Technology (H)	30.00	2.81	10.3
OTC	33.50	11.50	FTP Software Inc.	30.13	3.25	10.0
OTC	10.75	7.00	Group 1 Software	8.50	0.00	0.0
OTC	14.50	6.75	Gupta	10.12	0.63	6.6
OTC	11.75	4.63	Hogan Systems Inc.	10.63	0.50	4.9
OTC	49.75	21.75	Hyperion Software Corp.	44.00	1.25	2.8
OTC	18.63	11.25	Information Resources	12.94	-0.00	-0.5
OTC	32.13	14.75	Informix Corp (H)	32.13	4.50	0.4
OTC	14.18	7.38	Intergraph Corp	12.63	-0.62	-4.7
OTC	7.63	3.50	Interleaf Inc. (H)	7.62	0.61	8.8
OTC	22.25	8.63	Intersolv Inc	21.13	0.38	1.8
OTC	86.25	30.50	Intuit Inc.	75.63	1.75	1.7
OTC	47.00	19.00	Legent Corp	43.12	-1.00	2.4
OTC	64.12	25.00	Lotus Development	61.75	0.25	1.2
OTC	11.00	3.63	Magic Software Enterprises (H)	10.88	1.00	10.1
OTC	14.75	6.75	Manugistics Group Inc (H)	14.13	1.81	13.0
OTC	80.00	16.75	MapInfo Corp	50.75	1.50	6.1
OTC	6.50	3.44	MathSoft (H)	5.75	-0.25	-4.2
OTC	25.75	6.75	McAfee Associates (H)	11.88	-0.91	0.4
OTC	18.50	8.38	Mentor Graphics	17.00	0.38	2.1
OTC	14.63	10.75	Micro Focus	12.75	0.13	1.0
OTC	8.75	4.62	Micrografx Inc	8.75	1.63	23.4
OTC	92.38	46.69	Microsoft Corp (H)	91.50	4.00	5.4
OTC	32.50	5.63	NetManage Inc	17.50	1.13	6.9
OTC	39.75	23.00	Oracle Corp (H)	39.63	3.75	[illegible]
OTC	50.50	21.50	Parametric Technology (H)	[illegible]	1.00	2.0
OTC	24.25	9.00	ParcPlace Systems Inc	14.00	1.00	7.7
OTC	50.50	16.88	PeopleSoft	50.50	3.50	[illegible]
OTC	10.00	6.38	Phoenix Technologies (H)	10.00	0.00	0.1
OTC	15.63	5.50	Platinum Software (H)	14.38	0.50	3.6
OTC	25.75	12.00	Platinum Technology	18.38	1.75	8.7
OTC	59.50	27.00	Progress Software Corp	57.50	3.63	5.2
OTC	11.63	1.88	Quarterdeck Corp (H)	11.63	1.50	14.8
OTC	25.13	8.50	Rainbow Technologies Inc	24.63	0.50	2.1
OTC	8.38	2.00	RasterOps	6.38	0.63	10.8
OTC	6.13	2.00	Ross Systems	4.88	0.25	5.4
OTC	12.00	0.50	Sapiens Int'l Corp N.V.	6.13	-0.13	1.8
OTC	30.13	11.50	Softkey International Inc. (H)	20.13	0.16	0.6
OTC	6.25	3.00	Software Publishing Corp	3.50	0.50	[illegible]
OTC	12.50	5.75	State of the Art	10.75	0.38	3.9
NYS	39.63	25.00	Sterling Software Inc (H)	38.00	[illegible]	2.1
OTC	15.00	1.67	Structural Dynamics Research	[illegible]	[illegible]	[illegible]
OTC	55.00	19.88	Sybase Inc	[illegible]	0.13	0.1
OTC	30.00	10.25	Symantec Corp (H)	[illegible]	1.75	6.5
OTC	61.50	14.75	Synopsys	61.50	1.38	2.1
OTC	30.00	10.61	System Software Assoc.	20.00	-2.06	[illegible]
OTC	7.75	3.25	Trinzic Corp	5.88	-0.13	-2.1
OTC	24.00	7.88	Viewlogic Systems	[illegible]	[illegible]	17.6
OTC	32.00	10.75	VMark Software Inc	[illegible]	[illegible]	[illegible]
OTC	10.75	6.61	Walker Interactive Systems	[illegible]	0.13	1.6
OTC	55.50	15.00	Wall Data Inc.	[illegible]	-0.75	4.2
OTC	16.75	8.13	Wang Laboratories Inc	[illegible]	1.38	8.8
Semiconductors						**UP [illegible]**
NYS	38.00	22.75	Advanced Micro Devices	[illegible]	1.88	5.2
NYS	35.00	14.88	Analog Devices Inc	35.00	0.88	[illegible]
OTC	50.75	21.88	Atmel Corp (H)	50.75	[illegible]	[illegible]
OTC	14.88	3.63	Chips and Technologies (H)	[illegible]	1.75	20.5
OTC	66.88	21.00	Cirrus Logic (H)	[illegible]	6.88	11.5
NYS	63.75	15.00	Cypress Semiconductor Corp (H)	41.75	2.00	5.0
NYS	20.38	13.38	Dallas Semiconductor (H)	20.00	0.62	3.3
OTC	32.13	15.00	Integrated Silicon Systems	32.13	0.63	2.0
OTC	60.38	28.00	Intel Corp (H)	58.00	[illegible]	15.1
NYS	42.13	33.44	LSI Logic Corp (H)	42.13	4.50	12.1
OTC	37.13	25.50	Lattice Semiconductor (H)	35.00	[illegible]	3.0
NYS	30.25	15.25	Micron Technology (H)	30.13	8.00	16.0
NYS	66.63	43.38	Motorola Inc (H)	66.63	0.00	0.0
NYS	29.75	16.38	National Semiconductor (H)	29.38	1.25	4.4
OTC	33.00	6.75	Sierra Semiconductor (H)	33.00	2.75	[illegible]
NYS	100.00	63.38	Texas Instruments (H)	[illegible]	10.50	[illegible]
OTC	21.50	10.25	VLSI Technology (H)	20.75	[illegible]	0.0
OTC	5.25	1.78	[illegible]	4.50	0.00	0.0
ASE	21.75	11.75	Western Digital Corp (H)	20.75	0.75	1.1
OTC	88.00	25.00	Xilinx (H)	88.75	4.75	5.1
OTC	17.25	17.25	Zilog Inc.	17.25	0.00	0.0
Peripherals and Subsystems						**UP 4.86%**
OTC	26.63	14.38	American Power Conversion (H)	26.63	[illegible]	11.5
OTC	37.88	19.75	Adaptec Inc (H)	37.88	1.75	9.4
OTC	27.75	16.76	BancTec Inc	15.50	0.00	0.0
OTC	10.38	0.38	Cambex Corp (H)	10.38	1.88	22.1
ASE	4.75	1.38	Cognitronics Corp	1.63	0.13	1.3
NYS	16.75	0.00	Conner Peripherals	12.13	0.88	-6.7
OTC	26.00	7.38	Creative Technologies Inc.	9.50	0.13	[illegible]
OTC	16.11	3.50	DataRace Inc.	11.38	0.63	-5.2
ASE	7.63	4.75	Dataram Corp	5.63	0.50	8.8
NYS	25.88	12.50	EMC Corp (H)	25.38	0.88	1.6
OTC	33.61	6.50	Emulex Corp (H)	33.63	2.88	13.9
OTC	17.75	11.25	Evans & Sutherland (H)	16.38	1.88	12.9
OTC	26.00	11.75	Exabyte	14.50	0.25	1.7
OTC	8.61	1.88	Intelligent Info. Systems	3.50	0.75	7.7
OTC	20.13	1.50	Iomega Corp	21.63	1.13	5.5
OTC	6.75	2.00	IPL Systems Inc (H)	6.75	0.00	0.0
OTC	53.35	17.75	Komag Inc (H)	53.75	3.25	6.5
OTC	6.63	3.69	Maxtor Corp	6.63	0.31	5.0
OTC	11.60	4.00	Micropolis Corp	5.88	-0.13	2.2
OTC	10.75	6.73	Pinnacle Micro Inc	11.00	0.00	0.0
OTC	28.75	5.81	Printronix Inc	27.23	3.50	14.7
NYS	10.75	5.13	QMS Inc.	5.25	-0.25	-4.5
OTC	26.50	12.13	Quantum Corp (H)	26.50	2.60	11.3
OTC	15.00	7.38	Radius Inc	11.61	-0.75	-6.1
NYS	8.63	6.38	Recognition International	8.75	0.00	0.0
OTC	7.00	3.61	Rexon Inc	5.00	0.38	8.1
OTC	63.38	19.25	Seagate Technology (H)	63.38	3.61	6.4
NYS	29.13	17.88	Storage Technology	29.63	3.63	13.8
NYS	68.75	37.38	Tektronix Inc.	68.75	4.50	10.2
NYS	125.88	90.63	Xerox Corp	116.38	0.38	0.3
Services						**UP [illegible]**
OTC	25.63	14.31	American Mgmt. Systems (H)	24.63	1.13	4.6
NYS	3.38	0.56	Anacomp Inc	0.88	-0.06	-6.7
OTC	27.25	16.50	Analysts Int'l	25.88	0.13	0.5
NYS	64.00	50.75	Auto Data Processing	64.00	2.00	3.2
OTC	36.75	16.00	Cambridge Tech. Partners	32.75	1.38	-4.0
NYS	50.88	31.50	Ceridian Corp. (H)	50.88	2.13	6.1
NYS	30.88	18.12	Comdisco Inc.	30.50	0.00	0.0
OTC	16.75	3.50	Computer Horizons	15.50	0.25	1.6
NYS	36.75	30.75	Computer Sciences (H)	54.50	0.38	0.7
NYS	13.12	7.50	Computer Task Group	13.13	2.75	20.7
NYS	23.63	6.75	CompUSA Inc (H)	11.88	1.63	5.4
OTC	10.75	5.38	Control Data Systems Inc.	9.50	-0.25	-2.6
OTC	13.25	6.12	Egghead Discount Software (H)	13.13	1.46	12.3
NYS	45.00	33.88	General Motors E (GDS) (H)	44.75	1.50	3.5
OTC	14.25	6.88	InaCom Corp (H)	13.25	1.75	15.2
OTC	18.50	7.50	Intelligent Electronics	13.03	0.50	3.8
OTC	11.25	1.88	Merisel	3.33	0.63	9.6
OTC	18.50	8.50	Microage Inc	14.13	0.88	6.6
OTC	38.00	19.00	Paychex (H)	37.50	1.00	2.7
NYS	51.63	30.88	Policy Management Sys.	48.50	3.13	6.6
NYS	30.88	22.25	Reynolds and Reynolds	29.88	0.88	3.0
OTC	22.75	10.75	SEI Corp	21.61	1.13	5.5
OTC	61.00	22.75	Shared Medical Systems (H)	50.21	0.50	2.4
OTC	8.00	4.00	SHL Systemhouse	7.44	0.94	14.4
OTC	21.50	11.23	Software Spectrum Inc	20.75	1.75	10.0
OTC	52.50	32.75	SunGard Data Systems	50.50	-0.25	-0.5

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Cable TV

CONTINUED FROM PAGE 1

mon, Calif., has met the demand by devising a special wireless communications package marketed to cable companies.

As service providers, cable companies have a bad reputation, and now they also face heightened competition in the wake of a telecommunications bill recently passed by the U.S. Senate. The bill allows local, long-distance and cable providers to foray into one another's markets.

"We have been our own worst enemy through the years, and with the increased competition of the telcos, we know we have to do better," said Matt Haviland, vice president of engineering at Paragon Cable in Minneapolis. Accordingly, the company has "jumped on the wireless bandwagon" to improve customer service and increase sales as the phone companies breathe down their necks.

Paragon, recently purchased by Time Warner Cable in Stamford, Conn., and Viacom Cable International, Inc. in San Francisco are preparing to install systems using middleware to integrate incompatible wireless networks. The widespread application of this new technology will spark broader use, observers said.

On the move

At Paragon, where 10 vehicles have been outfitted since February with rugged, pen-based systems by Telxon Corp. in Akron, Ohio, technicians are able to communicate on a private specialized mobile radio network and the Advanced Radio Data Information Services (ARDIS) wireless network. By midsummer, Paragon plans to roll out the system for about 100 vehicles.

Haviland said the devices have allowed technicians to add one or two repair trips to their schedules a day — a significant gain. Technicians no longer have to use customers' phones or go back to the truck to use a mobile or cellular phone. And not only are they able to perform a repair and immediately report the service call, but they can upgrade service on the spot.

"A technician can say, 'Now that I'm here, have you heard about that HBO special and would you like to get extra service?'" Haviland said.

"Then they can run a credit check and add the service right away, with all the information going to billing. Customers no longer have to wait around all day for a repair. We can give them an exact time, and the technician can be there. It's been amazing," he said.

Everyone wants in

"The numbers of cable companies doing this sounds like it is approaching a critical mass," said Dan Merriman, an analyst at BIS Strategic Decisions in Norwell, Mass. "This is a really good sign for the entire wireless market as well."

Arrowsmith said it is currently implementing wireless systems for Time Warner Cable, Paragon Cable, Telecommunications, Inc. in Denver and Cox Communications in Atlanta. John Greening, vice president of Arrowsmith, said many other cable companies have come calling.

Richard Johnson, president of Ubiquinet, said cable company interest has reached such a fever pitch that the company has put together a customized package called the Cable Television Resource Management System.

Both Arrowsmith and Ubiquinet have used KeyWare, a middleware product by Racotek, Inc. in Minneapolis.

Working on two networks leads to virtual market saturation for communications, according to Johnson. Johnson and Greening said the cost per user of such a wireless system ranges from approximately $8,000 to $15,000.

Wireless cables

A sampling of some of the cable providers implementing wireless technology:

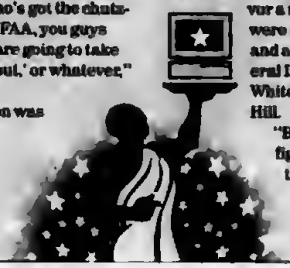
Cable company	Number of vehicles with handheld wireless devices	Usage
Time Warner Cable New York	10 out of 100 vehicles	Running on RAM Mobile Data network and a specialized mobile radio(SMR)
Cox Communications Omaha	44	Private radio channel
Continental Cablevision Chicago	20 out of 100, eventually	SMR, looking to add another network
Paragon Cable Minneapolis	10 out of 50, eventually	Running on ARDIS network and SMR
Viacom Cable International San Francisco	15 out of 87, eventually	Running on ARDIS network and SMR

National CIO: How much power?

Establishing the position of national CIO might sound like a swell idea, but it all depends on who gets the job and how much power that individual wields, procurement expert Bob Dornan said last week.

"You need somebody who's got the chutzpah and the power to say, 'FAA, you guys have screwed up, and we are going to take this away and contract it out,' or whatever," Dornan said.

GSA chief Roger Johnson was lukewarm to the idea as well, saying he prefers "interagency councils" comprised of agency-level CIOs. "I'd like to see the focus much more on agencies getting access to the best talent in the government and much less on central direction," he said.



Reed Phillips, former director of information resource management (IRM) at the U.S. Department of Commerce, said he would favor a national CIO only if the CIO were a strong and active advocate for the federal IRM community at the White House and on Capitol Hill.

"But if it's just going to be a figurehead political appointee, then not much will be accomplished," Phillips said.

—Gary H. Anthes

Government IS

CONTINUED FROM PAGE 1

But in some cases, even a 49-month procurement cycle would look good. "The Federal Aviation Administration relies on 1950s antiquated vacuum tube technology that sometimes fails, putting airline passengers at risk," Cohen said.

Sen. William Cohen *is calling for private-sector thriftiness to rule federal IS spending*

Cohen's bill would also create the position of chief information officer of the U.S. to approve acquisitions greater than $100 million and put into place other practices borrowed from the private sector, such as canceling projects that fail to meet predetermined cost and performance goals.

"Federal spending on information technology will be treated like an investment," Cohen said. Existing laws and regulations put too much emphasis on process instead of on results, he added.

Capitol Hill watchers were reluctant last week to predict the fate of the Cohen bill, which will now compete with several other pending procurement reform measures.

Bob Dornan, a senior vice president at Federal Sources, Inc. in McLean, Va., said the legislative attempts to deal with notorious federal sys' ".as disasters may be missing the point. "In some cases, gross mismanagement is being blamed on [information technology] acquisition," he said. "People say, 'If only we fixed the IT acquisition process, the FAA would no longer have to use vacuum tube computers.' I don't buy that notion."

GSA Administrator Roger W. Johnson called the Cohen bill "a very good effort in the right direction." But he added that the bill and some other pending legislative remedies do not address the vitally important preprocurement phase of systems projects.

"Most of the mistakes are made in the front of the process, for example, architectures that are too complex or business plans that are too fuzzy," he said. "So by the time you get to procurement, those systems are dead on arrival."

Retailers eschew cybershopping

By Ellis Booker

Retailers are substantially increasing their information technology budgets, but few are spending on technologies related to on-line shopping despite the dramatic impact they could have on the future of retail, according to a study released last week.

"The Fifth Annual Retail Study" from Computer Sciences Corp. and *Retail Info Systems News* reported that 62% of retailers this year project an increased information technology budget, up from 56% last year. Of those planning to spend more, the average increase was 22%.

The study, which queried 323 middle- and senior-level information systems executives, found that the bulk of these investments are aimed at maintaining or enhancing applications. Respondents cited host costs and the lack of paying customers as reasons to avoid investments in on-line shopping technologies.

Only 8% of those surveyed said they offered any kind of on-line shopping. This was the first year the survey asked about cybershopping.

Electronic shopping pilots are "on the back burner, but not on the far back burner" at Payless Cashways in Kansas City, Mo., said Richard E. Nawrot, senior vice president of IS. He said the home improvement retailer is more worried about short-term projects, such as moving its business systems to client/server.

The lack of confidence in cybershopping was a concern for Marie Beninati, a partner at CSC Consulting and Systems Integration and head of the firm's national retail practice.

"Larger, established formats that eschew on-line shopping soon will discover that size is not a strategic advantage in cyberspace," she said. The laggards in deploying interactive technologies "will find themselves at a distinct competitive disadvantage in the new millennium," she added.

News

Lotus deal gives IBM a chance to refute conventional wisdom

The comment "IBM can't sell PC software" was repeated many times on the eve of the Lotus takeover. Fortunately, the half-life of this truism will outlast its accuracy.

IBM has stumbled in selling PC software in the past, but this is a different, more decisive IBM, and it is getting a second chance to compete in an arena above the operating system.

If you will recall, the setbacks IBM experienced in PC software also happened to other systems vendors as they made their first halting steps toward the PC arena.

Surely you remember Hewlett-Packard's New Wave desktop environment and how it took the market by storm. I recently ran across a comment made in 1991 by the New Wave development manager that he was "disappointed" that Microsoft was developing OLE when HP had been a supporter of Windows. Microsoft should reciprocate by licensing New Wave's Object Management Facility, he said.

Now there's an idea. If only Microsoft had deferred to New Wave all that OLE documentation would be a lot lighter than it is today.

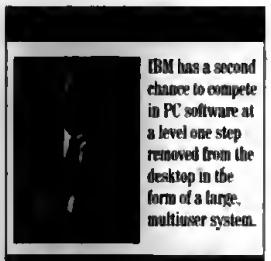
Sun Microsystems launched several initiatives at the PC market to convert it to Unix and — when that failed — persuade users to run Windows applications on SPARC, not Intel. Intel's family of chips appears to be weathering the Sun Wabi storm.

To leap from such examples to the conclusion that only Microsoft and a few others can sell PC software is going too far. Microsoft's success has been based in equal parts on its insight into the nature of the PC market and the clumsiness of its competitors.

As it has matured, Microsoft has begun to aspire to vertical integration in the hope of extending its reach from the desktop to the IS domain. In doing so, it is pushing more and more into systems thinking, but it has few direct ties to the IS community. It is working to correct this and has a sales force knocking aggressively on the doors of select Fortune 500 accounts.

But as a modern PC software company, it is most adept at getting others do its selling — retail stores, mail-order houses, distributors and PC systems integrators. IBM, in addition to offering its mainframe product line, retains some systems credibility with IS managers and has a sales force practiced in reaching them. In PC terms, IBM has the shelf space.

The Lotus deal gives IBM a second chance to compete in PC software in the form of a large, multiuser system. Its database and peer-to-peer networking expertise may come in handy with a groupware product such as Notes. And Lotus itself retains a team of practiced software developers itching for another chance to compete with Microsoft.



IBM has a second chance to compete in PC software at a level one step removed from the desktop in the form of a large, multiuser system.

Charles Babcock

Although questions have arisen about IBM's willingness to keep Notes an open environment, it's hard to believe IBM hasn't learned any lessons in what happens when it puts OS/2 first in a Windows-dominated market.

Notes is a document-sharing, object-store system. IBM's clear adherence to the Common Object Request Broker Architecture (CORBA) standard gives its "open" stance an element of credibility that Microsoft's would lack.

By heeding the community standard on objects, an IBM-owned Notes may attract the additional third-party developers needed to expand Notes' capabilities. Notes already has its own third-party following and is one of the few non-Microsoft PC products to reach that status.

The decisiveness with which IBM moved to acquire Lotus fended off other bidders and made it possible to convert a hostile takeover into a friendly one. Indeed, it is incumbent on Lotus' management to recognize that other fates awaited them — none of them appealing — after another fiscal year like last year's. With IBM's help, they live to fight another day.

IBM has wisely invested some of its last mainframe profits into the burgeoning field of PC groupware. If it can keep the Lotus development group intact and apply more large-systems expertise to Notes, it may yet befuddle its critics and improve its record in PC software.

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Inside Lines

Don't have a cow, man!

IBM postponed an expected PC Expo introduction of a promised Visual Basic look-alike because of delays in getting legal clearance from software vendors whose products it wants to feature in demos, sources said. Despite the legal snafu, IBM's knockoff of Microsoft's widely used development language is starting a limited beta-test release targeted at and users and application vendors. But the finished product — code-named Bart in honor of a certain skateboarding cartoon character — may not ship until early next year, depending on how the beta program goes, the sources said. What would Homer say to that? Doh!

Independence Day for Cabletron

After the July 4th fireworks subside next week, Cabletron will announce an upgrade of its Blue Vision management software that enables users to monitor both SNA and TCP/IP networks entirely from its Spectrum enterprise control console. Asserting itself as a challenger to entrenched enterprise management platforms, Cabletron will also push a trade-in effort to entice users to swap their packages from HP, IBM, Sunsoft and others to Spectrum.

Is it live support or is it Memorex Telex?

Memorex Telex is preparing to introduce a fully integrated network service and support center early next month. The Technology Solutions Center in Tulsa, Okla., consolidates all former technical service, help desk and network control sites in an effort to streamline support options. Cable & Wireless in McLean, Va., is already using the support center.

What's the big iron deal?

IBM is quietly offering some lucky customers its CMOS-based mainframes at bargain-basement prices in an attempt to whet appetites for the new air-cooled technology, sources said. Accounts with enough clout have been able to bleed the price down to less than $10,000 per MIPS — more than 33% less than IBM's usual rock-bottom price of $15,000 per MIPS. But to make sure no one gets too comfortable with the cut-rate costs, IBM includes a contract clause specifying that upgrades and additional systems will not come so cheap, the sources said.

Gimme, gimme good chips

Motorola and IBM are readying a follow-on to the PowerPC 604 chip that will incorporate x86 emulation capabilities in software, according to an IBM source. The chip, which will be able to run DOS and Windows programs in emulation mode, is expected by year's end. The 604E, as the new chip will be called, will emulate the performance of today's high-end 486 chips, the source said. Meanwhile, the much-speculated-upon PowerPC 615 hardware emulation chip is alive and kicking its way to delivery. IBM Microelectronics is readying the chip for a scheduled fourth-quarter launch, according to the source.

Ready, set, go P6

IBM will have a P6-based desktop system ready when Intel announces the chip later this year. Unlike most other vendors readying dual- and quad-processor servers based on the next-generation chip, IBM will put the chip in a uniprocessor minitower desktop system. Compaq is also expected to announce server products coinciding with the Intel launch. The products will be based on Intel motherboards, said a source close to the company.

One mainframe aficionado has noticed a crucial difference between traditional water-cooled machines and IBM's new CMOS-based System/390s: The cabinet doors on the CMOS-based boxes are, well, loose and flimsy. "When you slam the door on a Cadillac, you expect to hear a sort of thud," the user huffed. But the doors on his CMOS-based mainframe need a swift kick on the bottom to make them latch. Not a bad method for dealing with a lot of things, actually. But if any news tips come along and kick you, pick up the phone or the keyboard and give Computerworld a shout on our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.

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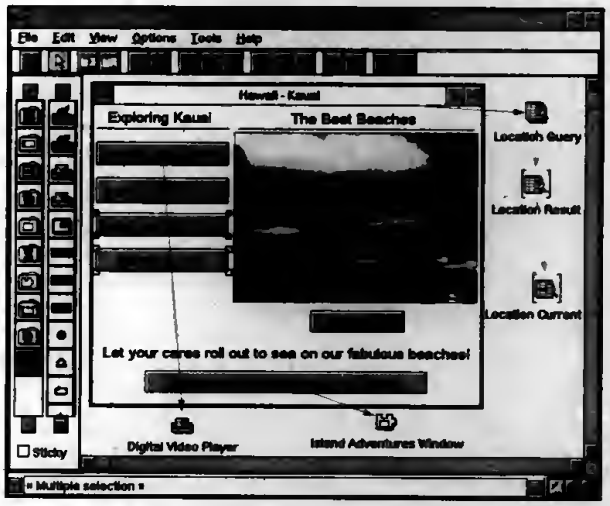

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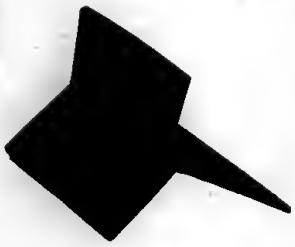

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